

# NetworkWorld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

**WAIT TILL  
NEXT YEAR**

 Lotus Notes and Domino 5.0  
releases to slip into 1998. *Page 2.*

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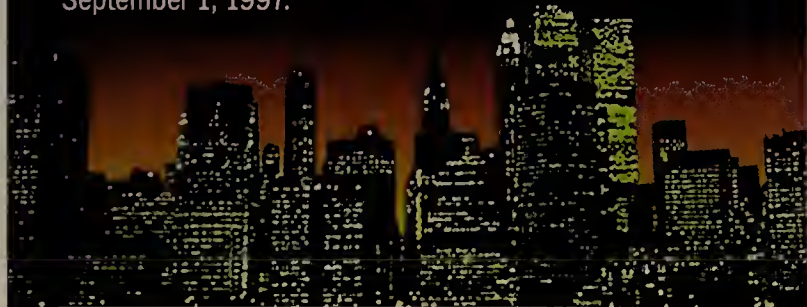
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## 56K modem spec suffers setback

By Tim Greene

The 56K bit/sec modem market has been thrown into a tailspin by an individual's patent claim that raises questions about who owns key pieces of the dial-up technology.

Uncertainty surrounding the claim has all but ensured that plans to finalize a 56K bit/sec modem standard by January will be derailed, said Ken Krechmer, a standards committee member who planned to raise the patent issue Saturday at the ISPCON '97 conference in San Francisco.

Major modem makers contacted last week said they are now approaching adoption of the standard with caution until they see how the patent issue plays out.

*See Delay, page 50*

Get more info online:

- A buyer's guide to 56K modems
- A comparison between 56K modems and ISDN
- A look at a proposed 56K/ADSL modem


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## IETF shows door to RSA secure e-mail proposal

By Ellen Messmer

The odds-on favorite e-mail security technology — S/MIME — suddenly is out of the running as an IETF standard.

The specification, based on technology from RSA Data Security, Inc., basically has been booted off the Internet Engineering Task Force standards track because of RSA's business practices.

Jumping into the race is RSA rival Pretty Good Privacy, Inc. (PGP), which is pitching an e-mail security specification called Open

*See RSA, page 50*

### THE 56K MODEM MARKET

The recently introduced modems already have a good chunk of the market, according to PC Data, Inc., a research firm based in Reston, Va.

 Retail modem market  
sales for June


## Security and speed



BorderManager protects and enhances Internet connections.

**N**ovell, Inc. this week is slated to deliver a major part of its Internet strategy with the release of BorderManager, a package of software tools for giving IntranetWare LANs access to the 'Net. Our evaluation

of a gold beta version of the product shows it is indeed a comprehensive set of tools, but work remains to fashion them into a seamless whole.

BorderManager is a major salvo in the war to protect IntranetWare desktops against the armies promoting native TCP/IP solutions. Comprising a firewall, content-filtering software, an IPX/IP gateway, virtual private network (VPN)

*See BorderManager, page 39*



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THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING

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## Reviewing Eric Schmidt

### Users to Novell CEO: Focus on products

 By Christine Burns  
and Paul McNamara  
Orem, Utah

Upon joining Novell, Inc. as its CEO in April, Eric Schmidt pledged to make the company an intranet/Internet industry leader

#### DIARY OF A CEO

April 7  
New CEO Eric Schmidt joins Novell

May 8  
Schmidt delivers NetWorld+Interop '97 keynote

May 19  
Novell details BorderManager features in New York

May 28  
Novell posts \$14 million second-quarter loss and 18% workforce layoff

June 13  
Novell and Netscape form Novonyx

July 14  
IBM and Novell ink Novell Directory Services deal

July 29  
Novell revamps stock option plan to keep talent

August 13  
Schmidt hires OMG's Chris Stone as a VP

within one year. Five months later, you would be hard pressed to find anyone outside the company who believes he has driven Novell even halfway to that goal.

Some customers and business partners said they sense a renewed enthusiasm and commitment to better service under Schmidt's leadership. However, many analysts and customers are withholding praise until Schmidt gets the company to deliver what really matters to Novell's bottom line: products that give customers good reason to turn down Windows NT.

"I don't care what he has to say. I just want him to show me the products," said Scott Sattler, senior network analyst with Cargill, Inc. in Minneapolis, which operates more than 700 Novell servers worldwide.

*See Schmidt, page 8*

### Pssst, hey buddy, wanna buy a network switch?

*Everybody's selling switches today, or so they say.*

"What's in a name?  
That which we call a  
rose by any other name  
would smell as sweet."  
— William Shakespeare

By Jodi Cohen

Switching is hot these days, and every vendor is trying to cash in on switching's cachet. But with all the talk about switching, it's sometimes hard to determine what's really a LAN switch and what isn't. Analysts say some vendors are confusing buyers by abusing the term, applying it to products that range from bridges to routers.

A LAN switch — in its purest form — is a multiport Layer 2 device that forwards packets at full wire speed. "A switch con-

#### MAPPING 'SWITCHES' TO THE OSI MODEL

If the device operates at:

##### Layer 2

It's a true switch — otherwise known as a multiport bridge — that transfers data between different ports based on the destination addresses of individual packets.

##### Layer 3

It's really a router, which performs routing functions at wire speed.

nects traffic based on a very large-scale integration (VLSI) hardware process and uses essentially static rules," said Thomas Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J. By contrast, a router steers traffic based on its address, using dynamically adaptable rules.

*See Switching, page 51*

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*See RSA, page 50*





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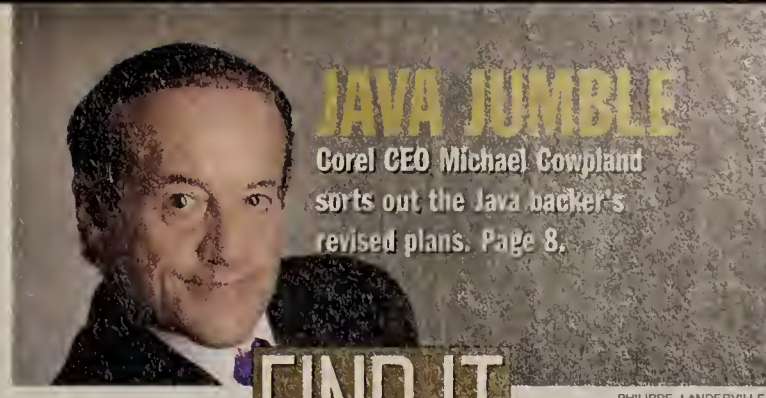
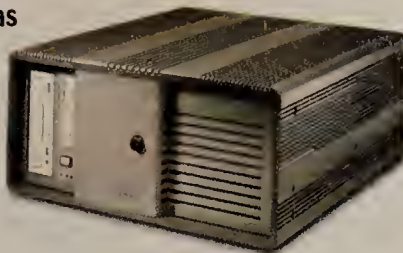


## REED BETWEEN THE LINES

New Cabletron President Don Reed gets ready to do internetwork industry battle. Our interview, page 15.

## MOVE IT ON OVER

New IBM hardware as well as service from AT&T are part of a renewed CTI push by the big boys. Page 19.



## JAVA JUMBLE

Corel CEO Michael Cowpland sorts out the Java backer's revised plans. Page 8.

## FIND IT FUSION

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## NetworkWorld

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## This Week

### Only on Fusion



**Keeping Current.** Enough already with all the talk about breaking up domain registration, Fred McClimans says. Sure, Network Solutions, Inc. needs help, but creating multiple registries just isn't the answer.

**DocFinder: 3532**

**Fusion changes.** In a couple of weeks, we're moving to an all new server architecture that will let us offer you a host of new services and enhance existing ones. Over the short term, however, it will mean some changes in the way you link to and bookmark specific pages on the site. Get all the details. **DocFinder: 3533**

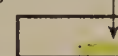
**Mail servers.** A user of Microsoft Exchange 5.0 last week found a bug that lets passwords continue to be cached even after an administrator tries to change them. **DocFinder: 3534**

**Java.** Sun has begun researching a new network OS that would combine Java object repositories, virtual machines and remote method invocations. **DocFinder: 3535**

**User Excellence.** You can submit a nomination for our annual User Excellence Awards via Fusion. **DocFinder: 3318**

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**BUILDING THE NEXT 'NET:** Commercial traffic will help universities pay for Internet 2. Page 37.

ILLUSTRATION BY VICTOR GAD



## News briefs, August 25, 1997

**BT cuts price for MCI purchase**

British Telecommunications plc last week shaved almost 20% off the price of its acquisition of MCI Communications Corp. MCI agreed to the new deal, valued at about \$17 billion, following an emergency review of MCI's books by BT officials. The revision was triggered by MCI's recent acknowledgement that it is bleeding hundreds of millions of dollars in its effort to enter the U.S. local telephone market. The Federal Communications Commission last week helped keep the deal on track by approving the merger. But since the two companies' shareholders still must ratify the new agreement, the merger is not expected to close until year-end.

**Opening a channel**

Bus-Tech, Inc. will announce it has become the first vendor to license IBM's new mainframe channel connectivity technology, MultiPath Channel (MPC) and MPC+. MPC enables high-speed, high-volume traffic between mainframes and downstream channel-attached routers and switches. IBM claims MPC technology can improve channel throughput some 40% and reduce mainframe cycle utilization by 60% over today's channel protocols. Bus-Tech will put MPC in its Net-Shuttle family of mainframe connectivity devices and in devices it makes for Cabletron Systems, Inc., said Al Brandt, vice president and general manager of Bus-Tech's NetShuttle business. Products employing MPC could hit the streets in six months.



Bus-Tech's Brandt

**Sun buys some Integrity, blends beans**

Sun Microsystems, Inc. last week said it intends to acquire Integrity Arts, Inc., a San Mateo, Calif.-based company founded in 1995, for an undisclosed amount. Integrity Arts specializes in the development of the Java Virtual Machine, operating systems and application technologies for smart cards. Subject to the closing of the acquisition, Integrity employees will join Sun's JavaSoft division.

Separately, Sun announced a development product called Java Blend, codeveloped with The Baan Co., that automatically translates and maps data and database structures so Java developers can write applications for any database entirely in Java.

**Page me**

Ardis Co., of Lincolnshire, Ill., this week is expected to announce a two-way messaging service. The Ardis Two-Way Messaging Service will let users send and receive messages over its net, which covers 80% the country. Users also will be able to send messages to Internet e-mail addresses and Cellular Digital Packet Data devices. The first paging device designed to interoperate with Ardis' service is Research In Motion, Ltd.'s Inter@ctive Messenger handheld device with a full keyboard. The device costs \$500. The service is available now through Ardis and its resellers, including ConectUS, Paging Dimensions and ProNet Technologies. Pricing ranges from \$30 to \$40 per month, depending on throughput.

**CA and Sun team up for management**

Computer Associates International, Inc. and Sun Microsystems, Inc. last week announced that they will bundle CA's Unicenter TNG management system with Sun's new Enterprise 450 workgroup server. They will distribute the package through Access Graphics, a reseller in Boulder, Colo. The bundled product will provide event management, job scheduling, security, backup and recovery, performance and network management. It will be available in the fourth quarter; pricing has not been determined.

**Sybase does Java**

Sybase, Inc. this week will release the final beta version of Jaguar, which is an application server that hosts software components and coordinates transactions between clients and back-end databases. The latest beta version now supports the Enterprise Java Beans specification, which is aimed at server-based Java components. Jaguar will be released at the end of September.

# Defense organization funds vendor work on network design pack

*DISA spends millions of dollars to make sure Make Systems' software meets needs.*

By Jim Duffy

It is fairly common for customers to have a say in a vendor's product development, but it is rare indeed when a customer spends millions of dollars to fund the work.

However, that's exactly what the Defense Information Systems Agency (DISA) has done with Make Systems, Inc., a developer of network design, analysis and simulation software.

DISA and Make are wrapping up a multimillion-dollar project to develop software for the Defense Information Systems Network (DISN), a hybrid ATM/IP routing/time-division multiplexing network linking all branches of the military and numerous federal agencies.

DISA and Make partnered more than three years ago to create network design prototypes for DISN. The prototypes have culminated in a software package that Make will release to the general public later this year as NetMaker XA 3.0.

The NetMaker package addresses two key issues faced by DISA and others constructing hybrid nets that support a complex application mix: It lets designers provide network applications with the necessary quality of service (QoS) and determines the best way to introduce new devices into a network to accommodate traffic growth and reduce operating expenses.

"We're responsible for topology design and analysis for large-scale networks," said Bill Hale, a DISA electronics engineer. "You need to determine how many [ATM switches there should be] and where to place them [and how to] hook your customers up to those things in such a way as to minimize cost and satisfy performance requirements."

DISA is one of the most advanced and sophisticated users of ATM and other network technologies. The transition to DISN from scores of disjointed T-1 and X.25 networks is one of the largest telecommunications

endeavors in history.

Make's NetMaker XA 3.0 developments should smooth that transition. Software network designers use NetMaker to model new or reconfigured networks and applications before putting them into produc-

vice levels. NetMaker's PDL allows network planners to select and set specific capabilities of routing, switching and hybrid devices.

For example, users can create models of ATM switches that show permanent and switched

**MAKE-ING THE GRADE**

**DISA needs to be able to do the following to manage network quality of service:**

- ▶ Characterize the mix of network applications
- ▶ Have models of voice, video, circuit and data sources
- ▶ Assign service levels by class
- ▶ Access ATM switch models that show permanent and switched virtual circuit routes, service classes and buffering approaches
- ▶ Attach services such as LAN Emulation and IP over ATM to router interfaces, LAN switching edge devices, ATM switches and hosts
- ▶ Predict or engineer point-to-point quality of service based on delay, delay jitter and loss

tion use. The key new developments in NetMaker XA 3.0 are an Application Profile Dictionary (APD) and a Programmable Device Library (PDL).

In order to guarantee application performance, APD has to characterize the mix of applications on the network. The software has to differentiate between enterprise network applications, such as SAP R/3 and PeopleSoft, and traffic riding carrier ATM networks, such as circuit emulation services and assorted broadcast and conference video applications.

"There is so much variation in broadband data applications that most people believe fine-tuning the network to [peak traffic periods] would be an unwise way to design the network," Hale said. "You really should have a topology that can accommodate significant variations."

NetMaker XA 3.0's APD includes models that represent the QoS requirements of circuit, voice, video and data applications. APD is designed to help DISA engineer networks that meet specific service-level requirements by class, such as available bit rate and variable bit rate. Different service classes require different priority and ser-

virtual circuit route setup, service and QoS classes, as well as buffering and scheduling approaches.

Services such as LAN emulation and IP over ATM can be assigned to router interfaces, LAN switching edge devices, ATM switches and hosts. The switch models will help DISA plan capacity in an ATM network, including the ability to predict or engineer point-to-point QoS based on delay, delay jitter and loss. To accommodate multi-technology environments, NetMaker XA 3.0 is expected to provide new device support for Ethernet, token ring, Fast Ethernet, FDDI and Gigabit Ethernet.

In addition, performance modeling is planned for LAN switches and routers from 3Com Corp., Bay Networks, Inc. and Cisco Systems, Inc. The software also will model ATM switches and ATM edge devices as well as public frame relay, LAN emulation and IP over ATM services. ■

**CORRECTION**

An article on page 1 of the July 21 issue stated that Microsoft said it will not issue a Java Development Kit (JDK) 1.1-enabled browser. But according to Microsoft, Internet Explorer 4.0 Preview 2 includes JDK 1.1 support.



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# Corel reaffirms commitment to Java

By Chris Nerney  
Ottawa

It is a case of moving forward by taking one step back.

That is how several analysts and industry players viewed announcements by Corel Corp. last week regarding changes in the company's Java strategy.

Corel announced yet another delay — plus a name change — for its Office for Java productivity software. Originally scheduled for commercial release last May — a beta version was made available last April — Office for Java was first bumped back to October.

But Corel CEO Michael Cowpland last week said Office for

Java now will be folded into the new version of CorelCentral software, which features bundled groupware, e-mail and calendaring capabilities.

Cowpland also announced a new Java initiative: client/server

software designed to enable Windows NT applications to run on any operating systems that utilize Java Virtual Machines.

The software, code-named Remagen, will be released in December, Cowpland said.

Though no longer touting a "pure Java" strategy, Cowpland said the company is dramatically increasing spending on Java development.

"We are actually redoubling our Java efforts," he said, countering initial reports last week that Corel was abandoning Java.

One industry analyst



## Schmidt

Continued from page 1

Cargill is looking to roll out 200 more servers but seriously is considering NT Server because Novell has failed to deliver a native TCP/IP version of its operating system, Sattler said. "[Novell is] playing the Internet game, but they still don't have a good, cutting-edge operating system to help them get there," he said.

Schmidt has spent much of the past six months at industry trade shows talking up Novell's 'Net services campaign, which revolves around cross-platform technologies such as Novell Directory Services (NDS).

He also has taken to the road at a frantic pace to touch base with as many major customers as possible. But customers still are skeptical because they have heard so much lip service from Novell executives in the past.

Schmidt was unavailable for comment, but a spokesman said the CEO is keenly focused on keeping product promises.

First, however, Schmidt has tried to get the company's finances in order. He has flattened the corporate structure by weeding out 40% of middle management, laying off 20% of the workforce and clearing the channel of excess inventory.

These moves have registered short-term hits to Novell's bottom line. The company last week reported a net loss of \$122 million and revenue of \$90 million for its third quarter. But the

moves also put Novell in a position for better long-term gains, said Mary McCaffrey, a financial analyst with Alex. Brown and Sons, Inc. in New York.

"But the only true judgement of Schmidt's efforts will be the products that get rolled out under his guidance," she said.

Using that gauge, Schmidt gets points for getting Border-

Manager, Novell's new suite of proxy-caching, firewall and virtual private networking services, out the door on time. That product officially hits the streets today.

"They're on the right track with this one because it lets you evolve what you have in

IntranetWare and NDS into a new way of computing using the Internet," said Phil Easter, technology strategist with Greyhound Links, Inc. in Dallas.

### What about NDS?

But Schmidt loses points on an equally strategic product — a version of NDS that runs natively on NT — that was supposed to be available by the end of this month. The product release has slipped, and now the software will not be available until fall. The delay is due to the addition of new management features that were not planned for the initial release, Novell officials said.

"There is no reason that Novell shouldn't have shipped this product a year ago," said Neil MacDonald, an analyst with Stamford, Conn.-based Gartner Group, Inc. He noted that Banyan Systems, Inc. shipped its StreetTalk directory service on NT over a year ago.



Novell CEO Schmidt

The true test of Schmidt's product delivery prowess will come if he can get the company to ship Moab, the next release of the operating system that swaps out Novell's proprietary IPX transport protocol in favor of industry-standard IP. Novell has been promising native IP support for two years; the ship date most recently was pushed back to early 1998.

Customers seem confident that Schmidt can get Novell to deliver this time around.

"He's taken a hard line on the switch to TCP/IP as a native protocol, and I think that's one of the most significant direction changes," said David Druker, a senior systems analyst at the University of Utah Hospitals & Clinics in Salt Lake City.

"When he went in and told the R&D group that they were no longer going to work with IPX, he forced Novell to join the rest of the world. That's a start," said Robert Sather, director of MIS at the Mayo Chemical Co. in Smyrna, Ga.

As for future products, Schmidt has to do a better job articulating how customers — especially the 50% to 60% still running NetWare 3.X — will be able to migrate to and use new network services.

"It's a big stretch to think of NetWare 3.11 file and print services moving toward object-oriented applications and network services that manage IP, security and Web access," said Jon Olsik, an analyst with Forrester Research, Inc. in Cambridge, Mass. ■

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said Corel's bid to ride the Java bandwagon early and hard was "brave but risky."

### Risky business

"They were rolling the dice, hoping to get a jump on the market," said Evan Quinn, director of Java research for International Data Corp., of Framingham, Mass. "In some sense they're paying the price now."

Ron Rappaport, an analyst at Zona Research, said Corel's decision to refocus its Java strategy makes sense.

"The reality is that Java is still a very young technology," he said. "Office for Java as an all-Java productivity suite was a test-the-waters product, and the waters may have been a little rough to compete with something like Microsoft Office." ■

## Notes/Domino releases slipping

Version 5.0 packages are key to Lotus' Internet effort.

By Paul McNamara  
Cambridge, Mass.

The next major releases of Lotus Development Corp.'s flagship Lotus Notes and Domino products will slip beyond the company's original fourth-quarter shipment projection and are unlikely to materialize in time for Lotus' annual user conference in late January.

The Notes 5.0 groupware client, code-named Maui, and the Domino 5.0 Web/application server are now due in the "early '98 time frame," according to a Lotus official, who declined to be more specific. In these versions, Lotus is expected to significantly enhance the Notes user interface as well as extend Notes functionality to Web browsers through the use of JavaBean components and support for the Internet Inter-ORB Protocol (IIOP) in Domino.

Industry observers said the delays could hamper Lotus' efforts to redefine itself as an Internet company and battle the likes of Netscape Communi-

cations Corp., which recently launched its fledgling Communicator messaging/groupware client suite. This would especially be true if the 5.0 releases drift into spring, observers said.

"If they don't do 5.0 [in January], it's going to really hurt [Lotus]," said an executive at one Lotus Business Partner company, who requested anonymity.

"Lotus has the ability to be

### LOTUS' TIMETABLE

Product	Expected release
Lotus Notes Designer for Domino	Q3
Notes/Domino 4.6	Q3
Kona, Java-based productivity applets	Q3 or early Q4
Notes/Domino 5.0	Early '98

the first major player to market with [IIOP support], which is a huge step in the Internet direction," said Eric Sachs, chief technology officer at Houston-based Interliant, a networked application service provider. "But now they're having to step a bit back from that in the time line . . . It

See Lotus, page 51

Be a

NET KNOW-IT-ALL

For the answer to this week's question and more net trivia, visit **Network World Fusion** and enter **2349** in the DocFinder box.

This week's question:

Which vendor has a Java application development effort dubbed the San Francisco Project?

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"Think of it as insurance," says *PC Magazine*, in its Network Edition. "You shouldn't try to maintain a powerful client/server environment unless you're also willing to establish a reliable physical environment for your servers."

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Have you ever been frustrated with a rack's inconvenient size and shape? With 73.5 inches (42U) of storage height for industry-standard 19-inch, rack-mountable equipment, NetShelter safely houses the critical network and power protection equipment you need. Placed in datacenters, server rooms, branch offices and wiring closets, NetShelter moves easily, but is totally secure and stable. The cleverly engineered NetShelter rolls through a typical seven-foot office door (84 inches), where other racks get stuck. NetShelter rises to only 81.5 inches, fully assembled on integrated stabilizing feet with casters.

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**Bruce Lagravinese**  
CIO, Cyberplay Computer  
Exploration Centers

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# Thin-client users grapple with server management

*An early Citrix WinFrame customer reveals its strategy for dealing with the multiuser NT software.*

By John Cox

Deploying Windows thin clients might simplify desktops across your corporate networks, but it won't make server management any easier.

That's what net managers are finding out at companies setting up Windows terminals to access multiuser Windows NT application servers based on Citrix Systems, Inc. WinFrame software.

To date, customers have made do with a grab bag of third-party tools. The long-term solution, however, appears to center on new Microsoft Corp. technology called Microsoft Management Console (MMC) and Hydra, which will be integrated into MMC.

MMC, which enters beta testing next month, is a management framework into which snap-ins from Microsoft and

Windows terminal vendors will be plugged. Hydra, which enters beta testing later this year, is Microsoft's multiuser server technology and is based on WinFrame. Both MMC and Hydra eventually will be part of Windows NT 5.0.

Until then, customers such as Bell Mobility Cellular in Toronto have to piece together plans to manage growing numbers of WinFrame and other multiuser NT servers.

BCE Mobile, Inc., the Bell Mobility cellular phone subsidiary, has installed over 70 WinFrame servers to support several hundred customer service representatives at two call centers. It also plans to have 30 more servers by year-end.

Instead of loading everything onto dual 150-MHz Pentium Pro-based Hewlett-Packard Co. Vectra servers, the company installed separate file servers to process big bitmaps created from digitizing faxed-in orders, said Dave Fransen, Bell's director of production services.

Bell also installed a switched Ethernet LAN and has limited net segments to no more than 50 end users.

To manage software, Bell rigidly maintains identical programs on all of the servers and separate identical software pack-

ages on all client PCs. The PCs are powered by 486 processors and run a stripped-down version of Windows 95 that simply hosts

tering technology is still in its infancy. Also missing are capacity-planning and performance tools, sophisticated load balancing, fault-tolerance features and advanced application management.

David Weiss, director of product management for Citrix,

## SERVER ISSUES FOR WINDOWS THIN-CLIENT USERS

Rolling out hundreds of Windows terminals creates new challenges.

### ▲ Good news:

Microsoft's NT scalability is phasing in, starting with Microsoft Clustering Services (Wolfpack).

Rack-mounted server farms can grow fairly easily, administered as NT domains.

Consistent software stack makes it easy to add new servers without disruption.

### ▼ Bad news:

The largest servers for Windows NT are typically four-CPU Intel machines.

The number of end users that can be supported on each server widely varies, based on type and number of applications, and type of workload.

Failover and load-balancing facilities are immature and limited.

Administrative tools are just emerging.

## Big Blue reinvents AS/400

*Latest minicomputers boast greater speed, scalability.*

By Marc Songini

Somers, N.Y.

IBM last week unleashed an AS/400 software and hardware barrage aimed at transforming the midrange workhorse into a full-blown Web server.

To position the new AS/400e family to function as a Web server, IBM has bundled in a firewall on a separate processor card. It also has enhanced the OS/400 operating system with security controls that let internal company users and authorized external Internet users access the systems.

The company claims the high speed of the machines makes them ideal for electronic business functions and data mining.

The AS/400e also comes with the following:

- TCP/IP connectivity software
- Wireless LAN support
- Backup Recovery Media Services
- OfficeVision and OfficeVision JustMail
- Native Java as a programming language (due in 1998)
- Native Lotus Domino for software communication (due in 1998)

- Windows NT on the Integrated PC Server and ActiveX technologies (due in 1998)

"In our environment, going to an electronic-commerce server is definitely the way to go," said Heather Gibbs-Poe, a technical consultant at Olsten Health Management, based in Orlando, Fla.

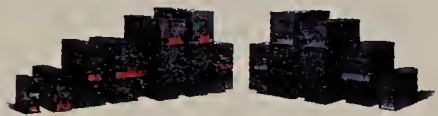
Olsten has been beta-testing the OS/400 4.1 operating system on its AS/400 machine for several months, said Gibbs-Poe. The company also is considering an upgrade to the AS/400e version. IBM "is certainly on the right track," Gibbs-Poe said.

Pricing for the AS/400e family starts at \$7,995 for a uniprocessor system and runs to \$1.2 million for a system with 12 processors, depending on the configuration.

For more information, contact IBM at (800) 426-2255.

*Elizabeth Heichler, a correspondent with IDG News Service's Boston bureau, contributed to this story.*

### IBM'S AS/400E FAMILY OF SERVERS FEATURES



- ▶ Eight- and 12-way processors
- ▶ 100M bit/sec Ethernet LAN support
- ▶ 996G bytes of disk capacity
- ▶ 20G bytes of storage capacity
- ▶ Enhanced Web integration

The new version of OS/400, available as an upgrade to current AS/400 users, includes DB2 performance improvements and better Windows 95 and NT system administration operations.

The four-member AS/400e family is built on 64-bit PowerPC AS A35 RISC chips and can be arrayed in eight and 12 symmetric multiprocessing configurations. Up to 32 processors can be lashed together as a single system.

This design allows the AS/400e servers to perform up to 25,000 transactions per minute — a leap over the previous generation's 5,000 per minute.

## Ipsilon rolls out new IP switch gateway

By Jim Duffy

Sunnyvale, Calif.

Ipsilon Networks, Inc. this week will roll out a new gateway that allows users to access the company's IP switches from fiber-based Ethernets.

Ipsilon last week also announced an arrangement with Accrue Software, Inc. to add Web analysis software to its IP switches. In addition to broadening Ipsilon's IP switch offerings and functionality, the gateway and Web analysis software will help users provision and monitor IP switching and Internet access.

The FAS116 gateway features 16 switched 10M bit/sec Ethernet ports, one 100M bit/sec Fast Ethernet link and a 155M bit/sec Synchronous Optical Network (SONET) ATM port. It can be used to concentrate multiple Ethernet workgroup segments onto one of the higher

speed ports for connectivity to Ipsilon's IP Switch ATM 1600 in the backbone.

The FAS116 also can be used by Internet service providers for Web hosting and high-speed 'Net access. For Web hosting, each of the Ethernet ports can be configured to offer 64K bit/sec to 10M bit/sec shared or dedicated server bandwidth. The 100M bit/sec port offers 64K bit/sec to 100M bit/sec server connectivity.

For Internet access, the SONET link provides a high-speed pipe to the Internet, and the switched Ethernets provide access to the customer's local LANs. The service provider can allocate bandwidth from 64K bit/sec to wire speed with the FAS116, Ipsilon said.

"It's a good application for ISPs or carriers who want to provide transparent LAN services," according to Don Miller, an

analyst at Dataquest, Inc., of San Jose, Calif.

The FAS116 costs \$7,950 and will be available in October.

Separately, Ipsilon last week said its IP Switch Processor now can support Web analysis software from Accrue.

Support for Accrue's Insight package means users can view server response time along with Ipsilon network response time data from any Java-enabled Web browser.

With this data, customers can use Ipsilon's rate-shaping capability to tailor the amount of bandwidth available to Web server farms.

Ipsilon will embed Accrue's Insight data collection software into its Intel Corp. Pentium Pro-based IP Switch Processor and offer it with every IP switch it ships beginning in the fourth quarter.

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# Software vendors accelerate dial-up remote access

By Tim Greene

Vendors Shiva Corp. and Traveling Software, Inc. last week separately announced technology that can speed the transfer of data over dial-up links without investing in new remote access hardware.

alpha testing, Shiva said PowerSurf can improve performance of a dial-up line from 20% to more than 200%, depending on how slow the link was initially. It runs on a Shiva LanRover Access Switch, and current customers can upgrade to PowerSurf with

the next issue of the LanRover operating system. On the client side, the user needs only a Web browser.

The Access Switch would sit at the edge of a corporate network and take in analog or ISDN dial-up calls from remote users. PowerSurf software would direct them to the corporate link to the Internet.

While Shiva is closemouthed about just how PowerSurf works, the proprietary software speeds traffic between an Access Switch and a Web server, the link plagued by

unpredictable Internet latency.

Normally, the greater the latency, the slower the TCP protocol sends packets. But PowerSurf tricks TCP into ignoring the latency so it sends packets faster than it would otherwise, Shiva said.

In addition, typical Web pages contain separate elements that require separate TCP/IP sessions to download. PowerSurf assumes the page download will

require one more session and sets it up ahead of time, a process Shiva calls prefetching.

Shiva's PowerSurf will be available in November for \$5,000 per Access Switch.

While Shiva is targeting Internet traffic, Traveling Software is speeding up any dial-up traffic with its Point B software. It combines compression and file caching to reduce traffic crossing the phone line, thereby speeding up

the transmission two to 20 times, the company said.

While similar to Shiva's PowerBurst and Stampede Technologies, Inc.'s TurboGold, Point B adds acceleration unlike those from the client back to the server, Traveling Software said.

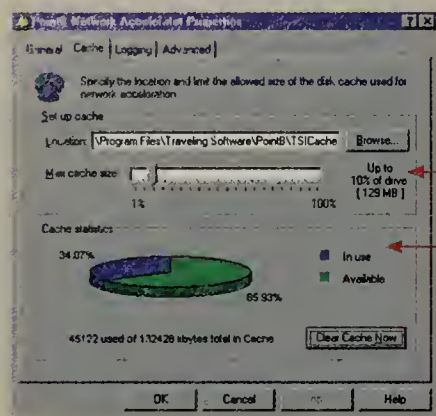
Point B runs on Windows 95 and NT client platforms and a Windows NT Server.

Point B is available now and costs \$1,999 for a server version with 10 client licenses. Additional licenses cost \$79 each.

© Shiva: (617) 270-8300; Traveling Software: (425) 483-8088

## Traveling Software's acceleration

PointB software caches files accessed remotely to have them handy when needed again.



User can set size of cache.

Graphic shows available caching space.

The Shiva offering, called PowerSurf, is directed at speeding up traffic downloading over the Internet by making the transfer more efficient. Currently in

## WorldNet business service: Ready for prime time?

Lack of peering partners could lead to performance and server problems for the company.

By Denise Pappalardo

A lack of private peering links could cause performance and service problems for AT&T WorldNet business customers.

Although the Internet service provider arm of the telecommunications giant claims it is establishing private peering connections, analysts said AT&T is far behind other top-tier ISPs (see graphic).

ISPs have established private peering arrangements — high-speed links among their networks to exchange traffic — without going through the overcrowded hubs that handle the bulk of Internet traffic.

While the practice of dedicating two or more T-3, 45M bit/sec connections between ISPs to exchange traffic is common, AT&T has yet to establish its first private peering connection.

AT&T's business strategy is not in question, but the execution of that strategy is, said Rebecca Wetzel, director of Internet services at TeleChoice, Inc., a Verona, N.J.-based consulting firm. "They have some catching up to do before their service is going to be of business quality. I'm surprised they haven't already worked out [private peering]," she said.

One of the reasons why AT&T has been slow to establish its dedicated private peering connections is because BBN Planet has supported the majority of AT&T's Managed Internet Service business users.

BBN and AT&T inked an exclusive deal in August 1995 that lets AT&T use BBN Planet's Internet backbone for all of its MIS users.

AT&T basically struck the deal to buy some time to establish its own infrastructure and

network connections, which it is still working on.

The agreement is for five years, but the last two are optional. It is safe to assume the two-year option will not be used,

traffic. But AT&T lacks the multiple private and public connections that it needs to support thousands of business users, Paulak said.

Because AT&T is supporting hundreds of users — AT&T would not offer a specific number — those users most likely would not notice congestion problems, Wetzel said. But if AT&T had to exchange traffic for 1,000 or more users at the access points, users would be likely to experience serious network congestion, analysts agreed.

While it is certain that AT&T will have all of its MIS users on its network by sometime next year, it is uncertain how the company will be able to support all of the additional traffic.

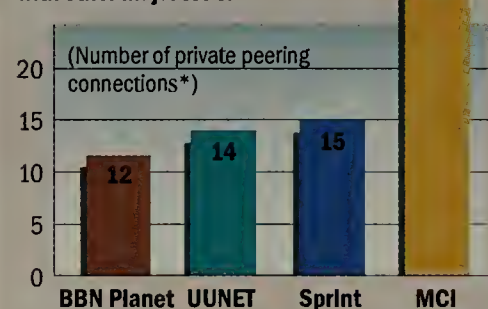
Paulak said if you are an MIS user on BBN's network, get one question answered by AT&T: How will it replace all of the network connections to the Internet you currently get through BBN within one year? This is imperative information that will affect the performance and reliability of the network, he said.

AT&T WorldNet MIS users on AT&T's backbone are getting excellent service, as will all of AT&T's MIS users that currently are on BBN's network, said Keith Foster, director of product management for AT&T's managed Internet services.

While AT&T acknowledged that it does not have any private peering connections now, it is confident it will have the appropriate connections in place when the network needs them, Foster said. ■

### KEEPING UP WITH THE ISPs

While the majority of AT&T WorldNet dedicated Internet access business users still physically reside on BBN Planet's network, the ISP has not yet set up private peering connections with other major ISPs.



\*These connections are typically T-3 or T-1.

analysts said. The first three years are up next year, but both companies seem to want out of the agreement early.

Since GTE Corp. in May announced its plan to acquire BBN Corp., BBN Planet's parent company, AT&T, and BBN have been in contract dispute resolution meetings. The merger became final earlier this month.

In May, AT&T also started putting all of its new WorldNet MIS users onto its own Internet backbone (NW, June 16, page I). AT&T's Internet backbone is based on its InterSpan frame relay network, said Eric Paulak, an analyst at Gartner Group, Inc., a Stamford, Conn.-based consulting firm.

AT&T has established dedicated connections at three different network access points and metropolitan-area exchanges, sometimes called public peering points, where it exchanges

## VocalTec embraces IP phone spec

By Denise Pappalardo

Northvale, N.J.

IP telephony vendor VocalTec Communications, Ltd. last week introduced its first standards-based client software in an effort to push the voice technology into the hands of business customers.

The company's Internet Phone 5 software supports the International Telecommunication Union's H.323 voice and video-over-IP specification, which means it can be used to communicate with users of any H.323 package over the 'Net. VocalTec's previous products were based on proprietary technology.

Internet Phone 5 also features new algorithms that improve audio quality.

In addition, VocalTec announced its NextGen Telephony Program, a comarketing effort involving a consortium of Internet service providers from around the world that will roll out VocalTec's Telephony Gateway 3.1 server and resell Internet Phone software.

The gateway makes it possible for end users to call standard telephones from PCs outfitted

with VocalTec's software, said Scott Wharton, VocalTec's product manager for Internet Phone.

Previously, users were required to deploy VocalTec's gateway server at their sites to make PC-to-telephone calls.

Dennis Miniero, executive vice president at Radiant House Europe, Ltd., said he is looking forward to his company's employees being able to call standard phone users at other firms from PCs running Internet Phone. The West Hempstead, N.Y., health and beauty aid importer/exporter has been using VocalTec's Internet Phone and Telephony Gateways for two years to reduce phone bills for internal calls.

"We are now saving about \$1,200 per month using the Internet for most of our voice calls," Miniero said. While audio quality can suffer when the 'Net is crowded, he said the cost savings make up for it.

Internet Phone 5 is available now for \$49.95. Current customers can upgrade for \$19.95 for the next month and for \$24.95 after that.

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**Frame Relay '97** will help you decide whether frame relay is the right service for your company and you will learn what benefits you can expect from implementing a frame relay network. In addition, this seminar, taught by frame relay expert Tom Jenkins of TeleChoice, Inc., will explore which applications perform well on a frame relay network and which carriers and equipment vendors you need to consider in your evaluation process.

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8. Understand the alternative approaches to running SNA applications over frame relay
9. Learn how pricing structures differ among carriers and how to take advantage of these differences to obtain the best service bargain
10. Analyze case studies of various network types to see how frame relay can be best implemented
11. Understand what network management options are available and the pros and cons of outsourcing vs. in-house network management
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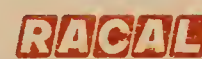
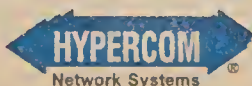
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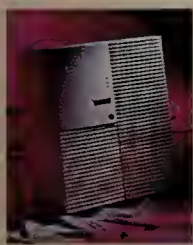


# Local Networks

Covering: LAN Hubs, Switches, and Management • Operating Systems • Servers

## Briefs

### ■ NEC Computer Systems Division, a unit of Packard Bell



NEC, Inc., last week expanded its Express-5800 line of servers. The new models are based on

Intel Corp.'s Pentium Pro 200-MHz processors with 512K bytes or 1M byte of cache. The Express5800 HX with two 200-MHz/512K-byte cache processors will be available next month for \$15,968; four-processor models start at \$23,547.

© NEC: (415) 528-6000

### ■ Network Integrity, Inc.

this week will introduce software that enables real-time backup and recovery services for Windows NT-based file systems. Real-Time Replicator for NT sits on any local or remote NT 3.51 or 4.0 server. It continuously monitors files that reside there and replicates changes to a backup server as they occur. Because only changes are replicated, this process does not consume as much bandwidth as a typical batch backup job.

The product will be available next month for \$2,999 per server.

© Network Integrity: (508) 460-6670

### ■ Northeast Consulting, Inc., of Boston, last week issued a report on Microsoft Corp.'s Systems Management Server 1.2.

The report concluded the product pays for itself in 14 months. The firm worked with 10 companies that have used the integrated desktop management product for at least three years and whose networks range in size from 150 to 14,000 end users. The study showed these firms saved \$1,200 per desktop annually, with the biggest savings coming from decreased software distribution costs.

© Northeast Consulting: (617) 654-0600

## Cabletron's Reed: 'The objective is to rival Cisco'

*NYNEX veteran ready to dive into data network market as internetwork company's new president.*



Next Monday, Don Reed arrives for his first day of work at Cabletron Systems, Inc., replacing the flamboyant Bob Levine as president and CEO. Whereas Levine courted the outrageous — including driving his own tank — former NYNEX Corp. President Reed is more buttoned-down. Recently, he discussed his thoughts on Cabletron with *Network World* Senior Writer Tim Greene.

**How can you make the transition from a slow-moving behemoth such as NYNEX to a fast-paced company like Cabletron?**

To be honest, I have been sort of the champion of [reducing NYNEX bureaucracy]. That's been my style all the time. The higher I got in the business, the more influence I was able to have to speed up the activity within NYNEX. If you talk to people who are in my organization, we have a conference call every Tuesday. We have people in Washington, [D.C.], New York and New England and we talk about international stuff. We get an incredible amount done, and we only spend half an hour.

#### Get more info online:

- The complete transcript of this interview
- Cabletron financial and stock info
- A Q&A with Bob Levine



**What kind of a personality can we expect out of you at Cabletron?**

I hate to use the word conservative because the connotation of conservative is nonaggressive. I'm every bit as aggressive and every bit as passionate about winning and getting the customers. But I don't think I'm as flamboyant and maybe colorful as compared to a Bob Levine. I can get pretty excited about things, about getting things done.

**Cabletron wants to capitalize on voice, data and video convergence. What do you know about data?**

Even though the basic telecommunications network was built for voice, we have converted that to data over the years. We've done it in a way that is similar to what a network company like Cabletron has done. We've done it through hardware and software conversions within our switches. And we've done it through technology further out in the network, like [asymmetric digital subscriber line] and being able to put data over copper.

A lot of that technology is very similar — although different from a technical standpoint — to what you're trying to do for customers in a company like Cabletron that's on the data side.

**Through acquisitions and other means, Cisco and 3Com**

**have bulked up their revenues. How important is size in this industry?**

would like to take this company and be able to rival a Cisco.

*"The objective here hasn't been to grow this company ... by acquisition. I don't know whether that's going to change or not."*

Don Reed, incoming president, Cabletron



SHAWN HENRY

The objective here hasn't been to grow this company from a revenue standpoint by acquisition. I don't know whether that's going to change or not. The objective is certainly not to stay in fourth place. The objective is to rival Cisco. I'm not coming in [to Cabletron] with any less of an objective than we want to be No. 1.

**What do you mean by "rival Cisco"?**

I'm talking really from a customer revenue standpoint. I

**Give us some reassurances for corporate customers that might be edgy about Cabletron's new focus on the telcos.**

Don't ever lose sight of your embedded base.

A cornerstone of any strategy is protection — not only protection from a company standpoint, but absolute exquisite service, sales and support to the embedded base.

You take care of that, No. 1, and then you figure out how to grow from there. ■

## Epicon brings the best of Java to Windows users

*Beta testers say Altis software makes application management less time-consuming.*

**By John Cox**  
Waltham, Mass.

If they didn't know better, companies testing a beta version of Epicon, Inc.'s new Altis software might think they were using Java.

Beta users reported that Altis, released last week, lets them quickly set up Windows applications on a Web server and configure the applications to be downloaded over an HTTP link as if they were Java applets. When an end user clicks on a Web page, Altis downloads only the minimum amount of code needed to install the application and run it locally on the end user's PC.

Therefore, the software allows MIS groups to deliver Windows-based applications efficiently to anyone with a PC and browser — internal users, customers or business partners. At the same time, any changes to the applications can be made once at the server; end users

receive the changes the next time they log on.

### Banking on Altis

A New York investment bank testing the software has nearly 300 laptop users. In the past, the company's applications suite took up about 100M bytes of disk space and had to be downloaded and individually installed on each machine from a CD-ROM or floppy disk. Altis has cut the disk space needed to run these applications to less than 30M bytes. Most of that space is taken up by Microsoft Corp.'s Exchange client software, said Sean Power, a network support specialist for the bank.

"The PC DOCS [document management system] client is 32M bytes," Power said. "But with Altis, I can run DOCS in 2M bytes; it takes just 10 minutes to download."

Altis has proven so easy to use and so stable, Power has been

able to add three applications to the laptop portfolio.

To set up applications with Altis, Power first runs the Altis Enabler, which goes through its own install process with the application and records that process. This information goes into the Application Description File (ADF), which is stored with the application's files on a server.

The Altis Administrator, which resides on the server, manages the ADF and application, and has a metering program to match end-user requests for the application with available licenses.

An end user logs on to a Web server and first downloads the Altis client, which weighs in at about 600K bytes and downloads as a Netscape Communications Corp. plug-in or ActiveX control. When the end user clicks on the PC Docs application icon, Altis Administrator checks the

*See Altis, page 24*





## Having the hots for Cold Fusion

If you have your own Web site or manage one for your company, the following story may be familiar. Even if it's not, my solution may be useful to someone in your company who has lots of data that should be updated frequently for an Internet or intranet site.

Part of my Web site ([www.vquill.com/inkpot/](http://www.vquill.com/inkpot/)) is a compendium of references for other writers. The Inkpot section started life as a single page with a half-dozen links to sites I found useful. Over time it outgrew one page, so I divided it into multiple pages organized by categories such as author and agent sites.

As time passed, the listings grew, and the site became more difficult to manage. Each new addition or deletion required firing up Microsoft's FrontPage Web authoring tool, loading the correct category page or pages, making the change, realphabetizing and then adding or removing the new tags where appropriate. I then had to send the new pages to my Internet presence provider via File Transfer Protocol.

Something had to change or the site would simply stagnate until it became hopelessly out of date. I thought about using Common Gateway Interface (CGI) scripts or Active Server Pages to create

some sort of database. But that would mean writing C code, Perl script or integrating a bunch of ActiveX objects with VBScript or JScript — not a promising outlook.

Then I noticed that my Internet service provider offered something called Cold Fusion from Allaire Corp. ([www.allaire.com/](http://www.allaire.com/)). This software runs via CGI, but it's really a Windows NT service that lets you use simple HTML-like

markup on your Web pages to interact with any database that understands SQL. Therefore, your back-end database could be Microsoft Access or SQL Server, or an Oracle or Sybase offering.

And when I say interact, I mean you

can do anything database-related from within a Web page: add or drop tables, create relationships or add/modify/drop data.

A query can include any SQL statement understood by your database, no matter how complicated or convoluted.

Cold Fusion also understands Simple Mail Transfer Protocol, which lets you e-mail-enable your Web site or database.

In addition, Cold Fusion features the Verity search engine to enable quick, form-based searching of all or parts of your site or database.



Dave Kearns

Cold Fusion has made the Web site management part of my life much easier, and that's the first thing I look for in an application. If a Web site is part of your life, then Cold Fusion could help you simplify it.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at [wired@vquill.com](mailto:wired@vquill.com).

### Tip of the week

Ben Forta has written an excellent guide to using Cold Fusion, even for those with little database experience. The Cold Fusion Web Database Construction Kit even includes a single-user version ideal for training. Find the guide at your local computer bookstore (ISBN 0-7897-0970-8).

## Compaq debuts crash-proof servers

VP John Rose says new systems show what Windows NT can do.

By Torsten Busse  
Houston

Compaq Computer Corp. last week announced two high-end network servers for running enterprise applications that companies cannot afford to have crash.

The ProLiant 7000 and 6500 servers feature Compaq's PCI Hot Plug technology, which allows for replacement of failed PCI peripheral boards without powering down the server.

The technology has been licensed to Intel Corp. and will be available to all of Compaq's competitors, said John Rose, enterprise computing group senior vice president at Compaq. With its new servers, Rose said Compaq is demonstrating that Windows NT can cut it as a high-end enterprise network operating system.

Aside from Windows NT, the servers also run Novell, Inc.'s NetWare and InterNetWare, The Santa Cruz Operation, Inc.'s UnixWare, Banyan Systems, Inc.'s VINES and IBM's OS/2.

Both servers are built around four

Intel 200-MHz Pentium Pro processors, with 1M-byte of Level 2 cache memory for faster instruction processing and 512K bytes of cache memory support. In addition, the servers feature SCSI-3 drives and dual 10M/100M bit/sec Ethernet auto-sensing network interface cards.

Additional features include Insight Manager software, which provides for monitoring, analysis and prefailure alerts.

Migration support for eight processors is included with the ProLiant 7000, while the chassis allows for expansion of up to 4Gbytes of memory and 11 I/O slots.

The rack-mounted, ProLiant 6500 is available in a 12.25-inch form factor that enables customers to fit up to six servers into Compaq's 42U 19-inch rack cabinet. Available now, ProLiant 6500 starts at \$14,735, while the 7000 starts at \$16,935.

Compaq can be reached at (713) 370-0670.

Busse is a correspondent with IDG News Service's San Francisco bureau.

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# Internetworks

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Muxes, Routers and WAN switches • Remote Access

## Briefs

■ **Motorola, Inc.** last week announced *MobileSURFR 56K*, a **PC card modem for laptop users** that supports a direct connect to Motorola cellular phones.



It is based on K56Flex modem technology supported by Rockwell International Corp. and Lucent Technologies, Inc. Available immediately, the *MobileSURFR 56K's* estimated street price is \$199.

& Motorola: (800) 426-6336

■ **Perle Systems, Inc.** recently announced that its *Perle 833* remote access server **supports Secure ID and ACE/Server network security software** from Security Dynamics Technologies, Inc. *Secure ID* is a token held by the remote user that generates random authentication codes every 60 seconds. *ACE/Server* is the centrally located software that authenticates the user.

*Perle 833* ships with the software now. Users who own a *Perle 833* under warranty can download it free at [www.perle.com](http://www.perle.com) or have it shipped to them on a disk.

& Perle: (905) 946-5003

■ **Cisco Systems, Inc.** last week announced the availability of *CiscoWorks 4.0*, the company's flagship device management tool. *CiscoWorks 4.0* now **supports current versions of Cisco routers** and the latest version of *Cisco IOS* software. It also is "year 2000-compliant" and runs on the following platforms: SunSoft, Inc.'s *Sun Site*, *Domain Manager 2.3* and *Enterprise Manager 2.0* running on Solaris; Hewlett-Packard Co.'s *OpenView 4.1*, *4.1.1* and *5.0* running on HP-UX and Solaris; and IBM's *NetView for AIX 4.1*. *CiscoWorks 4.0* costs \$9,995.

## New release of Sterling's Netmaster software to manage Cisco IP-based mainframe sites

*New mainframe-based application rounds out Sterling's TCP/IP and SNA management line.*

**By Marc Songini**  
Reston, Va.

Sterling Software, Inc. said it is covering all the bases when it comes to managing mixed TCP/IP and SNA networks.

Sterling announced a new release of its *Netmaster* management software that will support Cisco Systems, Inc.'s *IOS/390*, a program that handles TCP/IP communications on IBM mainframes.

*Solve:Netmaster* for TCP/IP 2.0 will help network administrators manage large, mixed

SNA and TCP/IP networks via a consolidated *Solve* graphical monitor.

*Solve:Netmaster* is a main-

frame-based application that is part of a suite of *Solve* software management tools.

It can function as a stand-alone management system or it can feed IBM's mainframe-based *NetView* package or Hewlett-Packard Co.'s *OpenView* management system.

The earlier release, *Solve:Netmaster 1.1*, lets operators view and manage *tn3270* sessions. It also can report the status of *File Transfer Protocol* ses-

sions. Users also can telnet to downstream routers to monitor network activity.

Version 2.0 builds on those functions and adds support for users deploying the *IOS/390* software and Cisco's mainframe channel-attached routers.

"If you don't have a connection to one of those routers, you may be losing access to critical applications," said Lisa Smith, product manager for the *Solve:Netmaster* product line. You also can check the status and availability of the routers with Version 2.0 of the software, she said.

When a router problem arises, it often has to be turned over to a specialist.

### SOLVE:NETMASTER FOR TCP/IP 2.0 FEATURES:

- Multidomain management and visibility for *tn3270* sessions and MVS-sourced FTP sessions
- MVS-based telnet to IP devices
- Socket APIs
- Support for Cisco's *IOS/390*

## NetSuite unveils third-generation design tool

*Software features enhanced discovery and tighter integration with existing packages.*

**By Jim Duffy**  
Wayland, Mass.

*NetSuite* Development last week unveiled a new version of its network design and documentation software that features enhanced device discovery, among other extensions.

*NetSuite* device library includes more than 6,000 objects from more than 130 networking vendors.

*NetSuite Professional Audit 3.0*, the company's autodiscovery engine, includes the new *Device MIB SoftProbe*, which allows users to discover the types of cards — router, hub or switch — that are installed in a network device, as well as the network operating system.

Once a discovery is completed, *NetSuite Professional Audit 3.0* populates a design sheet in *NetSuite Advanced Professional Design 3.0*. This package now includes the ability to validate designs from the physical through logical network layers.

### Full palette

A fixed palette of network layer protocol objects assign network layer properties, such as addressing information, to ports on a selected device or group of devices using a drag-and-drop interface. The palette includes protocol entities for IP,

AppleTalk, DECnet and IPX.

"It will tell you not only if the cabling is correct, but also if the protocol mapping is correct," said Scott Brown, corporate network manager at Community Newspaper Co., of Needham, Mass.

Brown said, though, that *NetSuite 3.0's* installation is limited graphically, and the registration process for using the software is time-consuming.

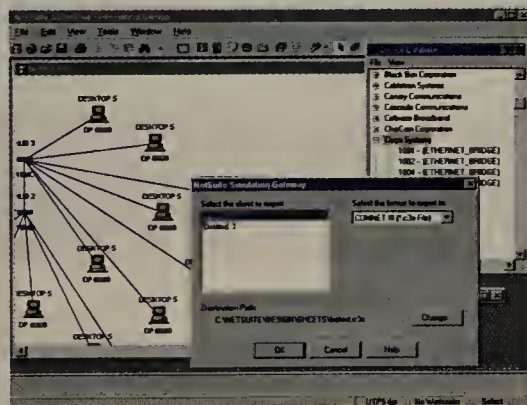
In conjunction with the *IP Planner* in *NetSuite Toolkit 3.0*, network addresses can be validated to ensure that both ends of a connection are running the same protocol.

*NetSuite Toolkit 3.0* also includes a simulation gateway that serves as an interface to third-party simulation tools. Version 3.0 initially works with CACI Product Co.'s *COMNET III* simulation tool.

*NetSuite Advanced Professional Design 3.0* costs \$2,500. *NetSuite Professional Audit 3.0* costs \$3,000, and *NetSuite Toolkit 3.0* costs \$1,000. The products cost \$6,075 when bundled together.

All products will be available in September.

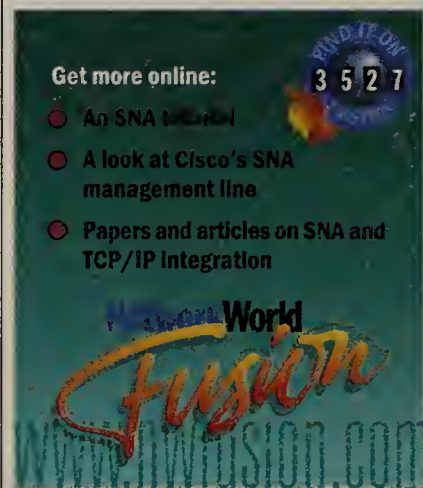
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*NetSuite's software* now documents logical network designs.

*NetSuite* rolled out Version 3.0 of its *Advanced Professional Design*, *Professional Audit* and *Toolkit* software packages. Version 3.0 features documentation of logical network design and tighter integration between the product's design and simulation components.

The *NetSuite* software runs on Windows and Windows NT workstations and servers. The



With *Solve:Netmaster*, "Our tool focuses on providing help desk staff with critical information on critical router devices," said Gale Persil, technical marketing manager for *Solve*.

Additionally, Version 2.0 supports TCP/IP Socket APIs that allow the creation of customized management applications.

Smith said *Solve* also eliminates the need for having separate management platforms tools for IP, SNA, TCP/IP for MVS or the *IOS/390*.

With *Solve*, users have one tool that handles them all, Smith said.

*Solve:Netmaster* for TCP/IP 2.0 pricing starts at \$42,000. It is available now.

© *Sterling* (800) 247-5163



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However, if IP is revised, other protocols must be changed as well. The significance of this protocol revision extends to LANs, MAN and WAN transmission systems, as well as the upper layer protocols and operating systems.

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4. Gain detailed insights into how the IPv6 transition will affect other supporting protocols, such as Ethernet, token ring, ICMP, RIP and OSPF.
5. Learn how leading vendors such as Bay Networks, Cisco Systems, Digital, FTP Software, IBM, Novell, Process Software, Sun, Wandel & Goltermann, and others are implementing IPv6.
6. Analyze the formats of the IPv6 packet header, Extension headers, ICMPv6 messages, Neighbor Discovery messages and others.
7. Define the principal motivation driving your IPv6 upgrade strategy: host-based features or router-based features.
8. Learn how to strategically plan your transition from IPv4 to IPv6, and steps that should be taken at critical points along the way.
9. Learn about the 6Bone — a worldwide IPv6 network operating in over two dozen countries and how to connect your network and gain personal experience with IPv6.
10. See live illustrations of key IPv6 features, including address autoconfiguration, router solicitations/advertisements and tunneling.

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## Briefs

■ **Sandra Brown**, who as large-market portfolio manager was one of **Sprint Corp.**'s top data services marketing officials, suddenly **resigned** following Sprint's announcement of new frame relay classes of service (NW, Aug. 4, page 6).

A Sprint spokeswoman said Brown is pursuing new opportunities with an unnamed internet-working company. Brown could not be reached for comment. Industry observers said Brown has been pushing for even more application-specific WAN transport services.

■ **Bell Atlantic Mobile** last week announced its **AirBridge Internet Access** service. The **Cellular Digital Packet Data (CDPD)** service lets mobile users access their e-mail, corporate intranet or the Internet using a CDPD modem and a standard laptop.

Bell Atlantic is offering **Sierra Wireless, Inc.**'s **AirCard**, a PC modem card that supports CDPD and analog dial-up connections for \$699. The service is available now for \$54.95 for unlimited access; volume discounts apply when ordering the service for 16 or more users.

© Bell Atlantic: (800) 308-3282

■ **CompuServe Network Services**, a division of **CompuServe, Inc.**, of Columbus, Ohio, announced last week that it has inked a handful of new deals that **expand its international network peering support**.

**CompuServe** is now peering with **Ebone**, which has 76 networks throughout Europe; **DE-CIX** with 15 networks in Germany; **MAE-Paris**, with seven networks in France; and **Internet Initiative Japan**, with seven networks throughout Asia. **CompuServe** interconnects with more than 200 Internet service providers and carrier networks in 150 countries, offering users global Internet access.

## Vendors debate Bell Atlantic/NYNEX merger

*If badly done, the merger could give competitors a chance to lure away disgruntled users.*

**By Tim Greene**

With the merger of Bell Atlantic Corp. and NYNEX Corp. all but a done deal, competitors find themselves torn between glee and anxiety over how the new Bell Atlantic will change the marketplace.

On one hand, Bell Atlantic could get so distracted by the mechanics of melding the two companies that it will let service quality slip, giving rivals the chance to steal away business.

But on the other hand, if Bell Atlantic has problems with the consolidation, it also could spell trouble for competitors because they rely on the incumbent local exchange carriers for some services in order to do business.

Competitors were so worried about Bell Atlantic quality falling off, the FCC put performance requirements in its approval of the merger (see graphic).

"If they carry all that stuff out,

it will help us compete," said Bruce Forsyth, vice president of voice marketing for Intermedia Communications, Inc. "But it's all stuff they're supposed to be doing anyway."

Manning Lee, chief counsel to competitor Teleport Communications Group, said NYNEX needs the additional prod the FCC requirements supply. NYNEX has been chronically slow to provision and repair lines TCG needs to conduct business, he said. With the FCC requirements, competitors can go to the commission with complaints. Without the requirements, competitors would be forced to take complaints to regulators in individual states.

On the NYNEX end, President Don Reed acknowledged the company has been slow to move. He has been working for several years to excavate the company from layers of bureaucracy

### THE BELL ATLANTIC/NYNEX MERGER

In winning Federal Communications Commission approval to merge, the companies agreed to:

- Set ordering, provisioning, repairing and billing standards that Bell Atlantic/NYNEX will meet when providing services to other carriers.
- Offer competing carriers network interconnection and individual elements of their network at prices that do not help pay off previously purchased gear.
- Offer an installment plan to small competitive carriers for what would otherwise be lump-sum payments for things like placing gear inside a Bell Atlantic switching office.
- Charge per-minute usage fees but not access fees for transporting competitors' traffic along lines shared by Bell Atlantic traffic.

that accumulated over the decades when the company had operated as a monopoly.

While Reed leaves NYNEX next week to take over the helm of Cabletron Systems, Inc., he said he thought his efforts have taken hold in most areas outside the greater New York metropolitan area. There is still work to be done there, he said.

Meanwhile, Forsyth said he

had concerns about the merger actually crushing competition. "They are creating a real gorilla in terms of size and market power," he said. "If these guys get their acts together, they can be some nasty competitors."

Reed predicted that Bell Atlantic will be granted permission to offer long-distance service within its region by early next year. ■

## IBM and AT&T look to boost CTI

**By David Rohde**

Two of the biggest companies in networking earlier this month took steps to push the troubled field of computer-telephone integration (CTI) forward. But analysts said a lot more work is needed to let users integrate their voice and data networks into a smooth-running machine.

IBM entered the market for premises-based computer telephony hardware with a set of passive backplane systems and single-board computers. The other big player, AT&T, unveiled Network-Enabled CTI, an enhancement to its carrier-network-based interactive voice services that retains caller-entered data even after the call is routed to a user's call center.

IBM's entry into the computer telephony hardware market signals a new approach for value-added resellers (VAR) to cobble together PC-based call-routing, unified-messaging and voice-response systems. IBM said it will work with distributors such as Ingram Micro, Inc. and Tech

Data Corp. to combine the hardware with voice boards and telephony software. The combination will give VARs easy-to-install computer packages that potentially could supplant PBXs in smaller offices.

The hardware Big Blue will use in this role includes the recently announced IBM 7587 and 7588 passive backplane systems, each employing IBM's own Pentium-based single-board computer to host telephony software. They are not entirely new boxes, however. For the past year, the same hardware has been used for IBM's DirectTalk interactive voice response platform. IBM said it has shipped about 100,000 ports of DirectTalk.

IBM's hardware should improve the scalability of emerging PC or minicomputer-based replacements for traditional PBXs, said Fred Yentz, manager of telecom development in IBM's Embedded Solutions business unit. The 13-slot 7588, which can be rack- or wall-mounted, includes 10 ISA slots for voice

boards made by vendors such as Dialogic Corp. Typically, one such card can support only 16 telephone sets. As a result, many users need multiple slots to build usable systems, Yentz said.

However, IBM and its distributors have not yet announced the precise packages of the hard-



The IBM 7588 13-slot passive backplane system can support up to 10 voice boards for additional scalability.

ware with voice boards and telephony software.

"They're bringing to the table their brand name, but then there's got to be delivery," said Art Schoeller, research director for voice communications at the Gartner Group, Inc. consulting firm.

"Let's see the beef. Let's see the delivery of the packages on the shelf," Schoeller said.

### Leaking data

AT&T's new offering potentially eliminates the need for networked voice response units at multiple call centers.

The enhancement uses ISDN D channel signaling to deliver the caller-entered data to the call center's switch, which routes it to an agent's screen, provided the agent has CTI screen-pop software, said Brian Bischoff, general manager of AT&T's call center offers.

The service is worth testing for users with multiple call centers that face the same problem of losing caller-entered data when a call is transferred to a different call center location.

Users also have to pay extra for each call using the service. For example, AT&T's Call Prompter service costs 7 cents each time it is played plus 6 cents per minute.

When the call is delivered to the call center, the 800 charges begin.

The Network-Enabled CTI enhancement will result in yet another additional charge, though AT&T officials did not reveal the price. ■



## WAN MONITOR

## Last-generation frame relay, next-generation VPN

**D**id you ever think you'd hear us say this? Frame relay networks are fast becoming passe.

It's true. Enough value is now being

added to IP networking services to support the radical changes in business and computing environments for remote systems access.

The corporation that distributes, utilizes and controls information best with suppliers and customers, as well as with employees in remote, mobile or telecom-

muting roles, will be in the best position to survive in a rapidly changing global economy. So you'd better get on board the virtual private network (VPN) express.

Before you catch that express, there are some VPN implementation issues you'll need to tackle. They include access speed and the type of technology to deploy; the integration of multiple protocols over an IP backbone, authentication, tunneling, firewalls, encryption, help desk support, software distribution and version control, asset management and end-user billing.

In addition, VPN directory services must be developed by your organization or support service provider. These directory services face the challenge of integrating multiple proprietary directory structures such as cc:Mail, VINES, Novell Directory Services and Microsoft Exchange.

VPN authentication systems include Remote Authentication Dial-In User Services, Microsoft authentication against an NT Domain or extended systems such as fingerprint scanners and token-based systems.

A variety of firewall technologies are available to help you keep intruders off your VPN. You can screen packet headers for source and destination, where entry is allowed or denied based on rules developed to define allowable transmissions.

Hardware is becoming available that solves many of the above problems. Take the new VPN products from Ascend, for instance.

The biggest remaining obstacle is reliable quality of service (QOS). Today's Internet is about as predictable as pizza delivery on a Saturday night — you know it will be slow or really slow just when you need it most.

The Resource Reservation Protocol isn't likely to provide the solution because implementing it on an end-to-end system and using it to provide service-level guarantees are two big hurdles it has not yet overcome.

However, because more and more Internet service providers use ATM backbones, they may be able to implement QOS in the underlying infrastructure and use it to support service levels on the 'Net.

Still, solving this issue will require the largest backbone providers to agree on a standard for delivering these quality assurances.

Briere is president and Heckart is director of broadband with TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at [dbriere@telechoice.com](mailto:dbriere@telechoice.com) and [heckart@telechoice.com](mailto:heckart@telechoice.com).

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- The Internet: English as a Second Language
- Around the Horn: Global Internet Outlook for 1998
- Bringing It Home: The Consumer and the Internet
- The Java Story: The Story Unfolds
- Internet Security: A Visit to Boomtown
- Internet Software Support: New Rules Apply
- Networking's Hottest Segment: ISPs as Customers
- ISP Server Hardware: A Field Report
- ISPs: Service Customers and Resellers
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## Briefs

■ **IBM's** release last week of its **ViaVoice** speech recognition product will allow subsidiary **Lotus Development Corp.** to offer the continuous dictation technology free to those who buy its **Word Pro** word processor in **SmartSuite 97** beginning in



October. Lotus originally had planned to include ViaVoice in **SmartSuite 98**, which is not

scheduled to ship until the first half of next year. An IBM version of ViaVoice, priced at \$99, allows users to dictate directly into Microsoft Corp.'s **Word**.

© IBM: (800) 426-2255

■ **Halifax, Nova Scotia-based FastLane Technologies, Inc.** has announced a tool for helping network administrators integrate **Microsoft Corp. Exchange** user accounts into existing **Windows NT** domain structures. The **Phoenix** tools automate the process of reconfiguring existing NT domains by giving administrators a single interface for migrating user account information, recreating global and local groups and changing users' rights. **Phoenix** will be available next month and will cost \$12 per network account.

© FastLane: (902) 421-5353

■ **Extended Systems, Inc.** next month will ship **ExtendedNet VPN**, a remote access server that lets end users connect to a corporate LAN over the Internet. The software supports end users running **Windows** or **Windows NT 4.X Workstation** and uses **Microsoft Corp.'s Point to Point Tunneling Protocol**. The \$2,999 server sits behind the corporate firewall to authenticate users by means of the **Challenge Handshake Authentication Protocol** or the **Password Authentication Protocol**.

© Extended Systems: (208) 322-7575

## Netscape unbundles Web browser

By Paul McNamara  
Mountain View, Calif.

After catching an earful from customers who prefer their Web browsers unadorned with extra features, Netscape Communications Corp. has changed course and unbundled Navigator from its Communicator messaging/groupware suite.

Netscape officials insisted this was their plan all along, but last week's announcement followed persistent criticism from customers and industry analysts regarding what some called the unnecessary comprehensiveness of Communicator, which debuted earlier this summer. Prior to that, Navigator was a stand-alone product.

Netscape hopes new sales of stand-alone Navigator licenses

will generate follow-on purchases of Communicator, Netscape's alternative to more widely installed e-mail and collaboration software from Microsoft Corp., Lotus Development Corp. and Novell, Inc.

"It was pretty clear what our intentions have been for some time," said Dave Rothschild, director of marketing client products at Netscape, referring to the Navigator unbundling. However, company officials failed to dispel press reports to the contrary over the past few weeks, even in response to an announcement from Lotus on July 29 that its next release of Notes would ship with Microsoft's Internet Explorer browser rather than with Navigator.

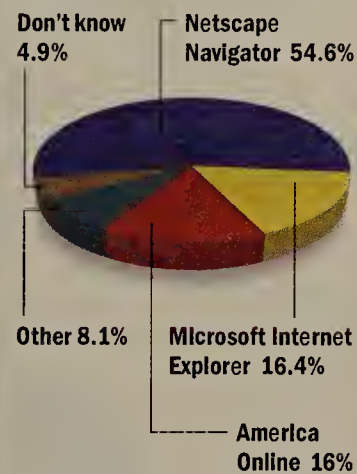
Lotus President Jeff Papows

said publicly as recently as two weeks ago that he was unaware of any decision by Netscape to unbundle Navigator.

Customers also were confused, although at least one was relieved to hear of Netscape's

### NETSCAPE'S THE TOP DOG

Web browser usage by primary browser:



Based on a survey of 786 users for Q1 1997.

SOURCE: IDC, FRAMINGHAM, MASS.

## New software to test impact push technology has on networks

By Chris Nerney  
Morrisville, N.C.

Push is one of the most talked-about technologies of 1997, and a growing number of companies are looking to push broadcast

nounced scripts for its flagship Chariot product that companies can use to measure the impact of push on their enterprise networks.

Ganymede Software, Inc. officials said the new performance scripts can emulate network traffic generated by push software from PointCast, Inc., BackWeb Technologies, Inc., Marimba, Inc. and other vendors.

This gives companies an opportunity to determine how specific push products will affect network performance before purchasing and installing the software, said Steve Joyce, Ganymede's vice president of marketing.

"The reason we came up with the product is because network managers have concerns about push," he said. "Push generally isn't a mission-critical application, but it has a big impact on the ones that are."

Besides assessing the impact of a push tool on a network, Gan-

ymede's scripts can determine the configuration settings and method of delivery for push information that would least affect a network, Joyce said.

"If they hadn't unbundled it, I would have probably wound up going to Internet Explorer," Lopez said. "I didn't need what they were trying to shove down my throat."

Lopez's organization uses Novell's GroupWise for messaging/groupware and had been comfortable with Navigator until Netscape decided to combine its browser with the e-mail,

their competition," said Ted Julian, Internet research manager at International Data Corp., a market research firm in Framingham, Mass.

The new scripts are available free to customers of Ganymede's Chariot application performance testing software, which costs \$11,000.

© Ganymede: (919) 469-0997

discussion and HTML authoring capabilities found in Communicator. He was quick to take advantage of Netscape's slimmed-down offering.

"We just downloaded [Navigator] 4.02 this morning, and I am getting ready to distribute it among my staff," Lopez said. "We had been holding off at Version 3.03 and had thought about switching over to Internet Explorer in the event that Netscape hadn't come to its senses and unbundled Navigator."

Netscape sees the unbundled Navigator as a natural stepping-stone to Communicator, Rothschild said. Priced at \$39, it also includes a Netcaster push component, as well as basic, server-based e-mail and calendaring capabilities that provide mobile users what the company calls "roaming access" from anywhere on the Internet.

In addition to the Navigator unbundling, Netscape announced that:

- Enterprise and student customers licensed to use Navigator or Communicator will be allowed to download a copy of the software for use at home without an additional charge.

- IBM has contracted to ship Navigator with, among other products, its VisualAge for Java integrated development environment, DB2 database, eNetwork Communications Suite, AIX and OS/2 operating systems, as well as PCs bundled with the IBM Internet Connection Service.

- It has reached client software licensing agreements with a number of vendors, including Sun Microsystems, Inc., Digital Equipment Corp., Hewlett-Packard Co. and Oracle Corp. as well as various Internet service providers and telecommunications companies.

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# Navy sets sail with intranet plan

CIO to run IP applications over an ATM backbone linking personnel on shore and at sea.

**QA** The U.S. Navy has launched an effort called Information Technology 21 (IT-21) designed to ensure that the military organization enters the 21st century with a top-of-the-line intranet and computing infrastructure.

The Navy plans to spend three-quarters of a billion dollars in the next few years to move ahead on the project, which will result in a network to be used by nearly 600,000 service personnel on shore and aboard 350 ships. Dr. Marvin Langston, deputy assistant secretary at the U.S. Navy's Command, Control, Communications, Computers and Intelligence division, and the Navy's new chief information officer, has the job of picking the network standards for the entire Navy. He recently spoke with *Network World* Senior Editor Ellen Messmer.

## Where did the idea for IT-21 come from?

It's really an initiative that evolved out of Admiral Clemmons, who is now the com-

mander-in-chief of the Pacific Fleet. IT-21 evolved out of a start-up project he did when he was the commander-in-chief of the 7th Fleet. He literally put in about 250 client/server stations using Web browser technology and modern commercial products to do his war-fighting functions. Through that activity, he became a strong believer in the power of networking, electronic mail and video teleconferencing. So when he took over as commander of the Pacific Fleet, he and I agreed that we would try to expand that pilot program into being a Navy-wide initiative to put an intranet into place.



The U.S. Navy's Dr. Marvin Langston

## To what degree is the Navy embracing Internet standard technologies?

In IT-21, we want to network our boat units as well as all of our supporting infrastructure on shore. We want to do it in a way that puts the right information into the commander's hands at the right time. We want to do it with Web technology, with which a person can point and click and

have that dynamic research structure coming out of our data repositories.

## Are those data repositories already in place?

They are in place from lots of different computing structures. The mainframe business of the Navy Department is primarily what we have supporting personnel, human relations data, financial and logistics data. The tactical databases are largely in client/server or specialized military databases, and we want to access all of those.

## So the Navy is standardizing on IP, HTML and GIF, or are there other protocols that are important?

We are trying to standardize on the most common, dominant open system standards. And we are trying to make those open systems standards support us as high into the ISO Open Systems Interconnection stack as possible.

At some point, when we get into the application layer, we have to come up with competitive, appropriate ways to spend public money on proprietary products.

## Will the project involve one gigantic purchase?

We're not trying to centralize that funding into a single pie. We think that the distributed mechanism has served us well in the past and can serve us well in the future. What we are trying to do is focus all of that purchasing so that it follows the same standards and fits into the same architecture that IT-21 has put down as a marker.

## I noticed that IT-21 makes mention of ATM. How deep is the Navy's interest in this technology?

It's very deep. My goal is to make our backbone infrastructure, working with the DISA [Defense Information Systems Agency] organization, an ATM infrastructure. This will let us collapse our voice, video and data into one fabric as opposed

to three as we move forward so that we can truly provide service and price on a bandwidth-on-demand basis.

### Get more online:

- The complete transcript of our interview
- Other intranet case studies



## What can you say about the role security will play in your intranet strategy?

Security is one of my priorities. We are moving to modernize a lot of older, secured systems with new technology.

The exciting news is that the commercial world got very interested in security and, therefore, there are emerging products that help us. There are also new products coming out of *See Langston, page 25*

## Altis

Continued from page 15

ADF and downloads only the minimum components needed to install and run the application's main features.

When the end user clicks on a function that is not held locally in cache, the Altis client calls the Altis Administrator, which downloads the needed components. "You really just run the Enabler," said Mark Felberg, vice president of Applied Computer Systems, Inc., a Tampa, Fla., systems integrator that was scheduled last week to begin installing Altis at a client site. "You use a browser to initiate the download and then Altis just becomes part of the desktop."

Felberg said he is like many application users that need only a subset of features found in fat PC applications. "I probably only use 10 things in Microsoft Word, and I never use the wizards or macros," he said.

The only problem Power and Felberg had with Altis was the software's inability to work with poorly written or monolithic applications. "Bad programs write their files in multiple locations," Power said. "It's much harder for Altis to enable these programs."

Altis is available now; pricing is based on the number of users and applications. For example, one application and 25 users, costs \$2,450; for 5,000 users, the price is \$175,000.

© Epicon: (617) 684-0072

## RealityCheck

**Product**  
Altis

**Company**  
Epicon, Inc.

### What it does:

Lets you download via the Web only those Windows application components needed to run an application on your PC. It's the same concept used for Java applets, except applied to Windows.

### The benefits

No changes to existing Windows applications, which are now accessible via the Web

Minimizes download time

Software can be centrally managed and updated

### The drawbacks

Even with a "shrunk" application, initial download can take many minutes

May require new procedures and tools at server level to ensure application manageability and availability

### The user view

"Our PC application portfolio used to take up about 100M bytes of disk. We've cut that to about 30M bytes with Altis, and nearly 25M bytes of that is the Microsoft Exchange client." Sean Power, a network support specialist for an investment banking company

# GoldMine preps Java-based contact manager

By Chris Nerney  
Pacific Palisades, Calif.

GoldMine Software Corp., a developer of contact management groupware, plans to release a Java version of its flagship product this December.

GoldMine Java will include the same feature set as the company's existing Windows and Windows NT 4.0 offering, but end users will be able to access the software by downloading Java applets to their desktops.

Separately, the company is now beta-testing GoldMine 4.0, an upgrade to Version 3.2, which shipped last September. New in Version 4.0 is the ability to access information stored in multiple databases, such as those from Oracle Corp. and Lotus Development Corp., through a

pull-down menu. Version 3.2 ran on Borland International, Inc.'s dBase database, which is designed for small workgroups and has limited file capacity.

"Most contact managers lack

Stamford, Conn. However, she added, "until 4.0 comes out and I see how people work with it, I can't tell if it's scalable."

GoldMine 4.0 also includes a multithread component that allows tasks to run as threads in the background without interrupting what the end user is working on at the time. Many features of GoldMine 3.2 have been retained in the new version, including Internet e-mail and Web import and launch features. GoldMine 4.0 uses a Windows interface on the client side, with database management software running on a server.

GoldMine 4.0 will be priced at \$295 per license and \$895 for a five-user license. The Java version will cost \$100.

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GoldMine Software's new GoldMine 4.0 features organizational trees that users can rearrange by dragging and dropping.

the ability to support relational databases," said Wendy Close, an analyst at market research firm Gartner Group, Inc. of



## 'NET INSIDER

## Misleading with the IETF

**S**ubmitted to the IETF is becoming an increasingly common phrase in this and other technical publications, but in some cases it can be misleading.

The Internet Engineering Task Force (IETF) was formed in 1986 to help evolve the Internet Protocol, the Internet and protocols that run over the Internet and private IP networks. The IETF, which can be reached on the World Wide Web at [www.ietf.org](http://www.ietf.org), has three meetings per year, the most recent of which was held in Munich two weeks ago.

The IETF's work is done in the more than 100 active working groups. The organization has no fixed membership: Anyone interested in their work can attend the meetings and join the working group mailing lists.

The standards process — defined in Request for Comments (RFC) 2026 — almost

always involves extended working group deliberations before any proposal is accepted into the IETF standards track. These deliberations begin with the publication of an Internet-Draft (ID) describing the proposed technology, and revisions are published as work proceeds.

When the working group feels that the ID is ready for prime time, the group sends a request for consideration to the Internet Engineering Steering Group (IESG). The IESG will then issue a Last-Call asking anyone in the IETF with comments on the ID to please send them to the IESG. If there are no show-stopping comments and if the IESG's own review concludes that the technology fits the

requirements for IETF standards track technology, then the ID is republished as an RFC with Proposed Standard status.

But not all IDs are for working group consideration and not all RFCs are Internet Standards. Any individual can ask for the publication of a properly formatted document as an ID and almost any generally relevant topic is accepted. There

might be a question raised about a recipe for medicinal brownies, but if the document is about some Internet-related technology it generally gets published without any sort of technical review.

In the same way, individuals or organizations can request that some document be published as an Informational RFC. These documents are given a quick review by the IESG to be sure that they are not too wacky, but most get published as requested. Note that an Informational RFC is not

an Internet Standard and frequently has not been the subject of any working group review.

We are now seeing more and more cases where someone sends a document into the IETF for publication as an ID and then claims that the technology has been "submitted to the IETF" even when there is no working group dealing with the topic. While some of these announcements might be because of a misunderstanding about the IETF process, most seem designed to mislead the public into thinking that the technology is under active consideration by the IETF when it is not. So the next time you see such a press release, treat it with some skepticism, especially if there is no specific IETF working group mentioned.

Disclaimer: As a member of the IESG, I get ticked off when this happens, but Harvard could not care less.

*Bradner is a consultant with Harvard University's University Information Systems. He can be reached via e-mail at [sob@harvard.edu](mailto:sob@harvard.edu).*



Scott Bradner

## Langston

*Continued from page 24*

the National Security Agency [NSA] that allow us to build network architectures in a secure way and that handle the high data rates we want.

So if we encrypt at the network layer with bulk ATM encryption products, then encrypt at the application layer with software/hardware encryption, then use firewall technology, we have a way to create a layered defense mechanism.

### What role will Fortezza cards play in the network?

The security model that we follow may or may not be the Fortezas on every machine.

I envision that it will actually be password-protected at the lower levels and move up through the smart cards and Fortezza cards.

We will use whatever other combinations of security we want to validate who it is on the end of the computer and what information is being passed. ■

## In the Labs

## Sun's going places with JavaSpaces

*Java-based technology at heart of new distributed operating system for the 'Net.*

By Ron Guth

*Mountain View, Calif.*

Sun Microsystems, Inc. is experimenting with models of distributed computing that company officials said could result in a future operating system for the world's largest computer network: the Internet.

The project is based on technology called JavaSpaces, which involves creating repositories for Java-based objects, as well as the Java Virtual Machine (JVM) and Java's Remote Method Invocation (RMI) functionality.

Through advanced research that could bring to life Sun's decade-old slogan "the network is the computer," the company hopes to extend today's model of computing from one relying on individual computers running operating systems that organize data in file systems, to one in which the operating system and applications are not beholden to single machines.

Rather, the operating system and applications will live on a

network, company officials said.

In its rough form, one project goal is to create a distributed operating system that would have global scalability. Such an operating system would run across all machines connected to any large network. This would enable users on any networked

technology and architecture at Sun's JavaSoft division.

Working JavaSpaces have been built in the lab, but before Sun makes the technology available to the general public, the company has to "make sure the implementation meets our performance demands," Mitchell said. He added that Sun has no planned rollout date for JavaSpaces.

Despite its current research and development status, company officials said work on JavaSpaces could be the crescendo to Sun's Java effort, which, from its inception, has offered the promise of hardware-independent

computing. Sun partners have already received JavaSpaces APIs and are providing input on the work, Mitchell said.

This concept is not unique to Sun: Similar projects are being whisked from academe to software labs at leading computer vendors such as Lucent Technologies, Inc., with its Inferno operating system, as well as Microsoft Corp. The Redmond, Wash.,

software king is working on a project code-named Millennium, which also aspires to build a new distributed operating system, company officials said.

Sun's distributed systems work and JavaSpaces development combine the vision of Sun cofounder Bill Joy and the advanced parallel processing work of David Gelernter, a computer science professor at Yale University. The work is taking place in Chelmsford, Mass.

The model for JavaSpaces is drawn from functions developed by Gelernter that address parallel programmers' challenge of manually assigning tasks to multiple processors.

The functions, code-named Linda, create a shared memory space called a TupleSpace in which results of a computer's processes or the processes themselves are stored and can be accessed by multiple CPUs.

All of the contents of a TupleSpace are marked with self-describing tags that help match processes with CPUs looking for tasks.

The power of a JavaSpace is it provides a venue for RMI-capable applications and hardware to share work and results over a distributed environment. To date, Java applets have been mainly implemented in a client/server

model. In other words, when users download an applet, it is executed locally, and the results are kept by the client.

But with a JavaSpace, applets can share their results and data with other applets, enabling developers to build distributed applications over large-scale networks or possibly even the Internet, Sun officials said.

One key attribute of a JavaSpace is it can store data and serialized objects, which could be combinations of data and methods that can be invoked on any JVM-equipped machine.

As a result, the spaces achieve distributed object persistence, meaning that a JavaSpace entry can be transmitted from machine to machine and retain its original behavior.

Using JavaSpaces, large networks could be treated as huge computer systems with millions of processors and objects, company officials said.

In short, the Sun research poses the question: Why can't the components, data and applications today found within one machine be tossed out on the Internet?

*Guth is a correspondent with IDG News Service in Tokyo. IDG News Service Munich correspondent Margret Johnston contributed to this story.*

**"There are many distributed system problems that we think map well on JavaSpaces."**

**Jim Mitchell,**  
vice president of technology  
and architecture, JavaSoft



Java-enabled device to be freed from concerns about the location of data and where computations are performed. The system would be secure and self-monitoring, moving and replicating data automatically, officials said.

Though perhaps the cornerstone to the project, JavaSpaces is still considered a research and development project, according to Jim Mitchell, vice president of





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*Internet Technology*

# Getting in on ActiveX action

A

ctiveX is no Java substitute.

Despite Microsoft Corp.'s attempt to turn ActiveX into a cross-platform alternative to Java, experts say ActiveX's real strength lies inside corporate networks running Windows.

"Microsoft's effort to port ActiveX hasn't quite had the oomph [the company] would like," says Eric Brown of Forrester Research, Inc., a market research firm in Cambridge, Mass. "Not only does ActiveX not run on Unix, it barely runs on Macs and even has problems on some Microsoft platforms, such as Windows CE."

Indeed, Java has thrived on the Internet because of its ability to run on different operating systems. In addition, Java applets are considered more secure, running inside a sandbox that limits the ability of applications to access disks or perform system functions, such as allocating memory.

But analysts say ActiveX has some advantages Java can't offer inside corporate networks.

ActiveX allows developers to take advantage of features built into the Windows operating system. And because it doesn't run in a sandbox, ActiveX programs can access files and perform other functions taken for granted in traditional desktop applications. While this access might be a negative on the public Internet, it's often a big plus on private corporate networks, where there is a different set of security issues.

ActiveX also might be easier to use for legions of programmers already comfortable with Windows. Some analysts believe ActiveX will generate more revenue than Java because Windows dominates corporate desktops.

An International Data Corp. study issued last year pegged the market for ActiveX and related technologies at \$600 million by the year 2000; IDC predicted the Java market would total just a third of that.

"Arguably, the money is in corporate internets . . . and there it makes sense to use ActiveX," said David Chappell, a Minneapolis-based consultant who leads seminars on ActiveX.

**What do users think?**

Chappell had a hard time naming companies using ActiveX on their enterprise networks. And Forrester's Brown says, "We see a lot more Java applets than ActiveX controls."

Several users contacted for this story also say they prefer Java to ActiveX. The Boeing Co., for instance, is using Java for front ends to databases. "We're not [using ActiveX] because we're in a multiplatform environment," says Carl Leck, acting project manager for operations at Boeing in Downey, Calif. "We've got NT, VAXes and Unix."

Schlumberger, Ltd., which has operations ranging from smart cards to oil field services, says it's also steering clear of ActiveX for the time being.

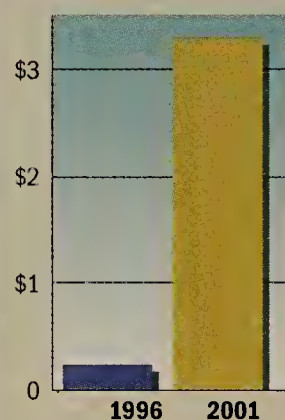
*By Todd Wallack*

"We're a Netscape [Communications Corp.] shop," says David Sims, technical manager of information technology for Schlumberger.

Netscape's browsers traditionally haven't supported ActiveX, which sharply limits the number of possible users. But Netscape says it plans to support the technology in upcoming versions of its browser, and plug-ins are available in the meantime.

**ACTIVEX PREDICTIONS**

ActiveX Control market  
(In billions)



SOURCE: GIGA INFORMATION GROUP, CAMBRIDGE, MASS.

Where ActiveX Controls  
will be used:

Revamping applications	24%
Intranet applications	16%
Accessing proprietary systems	13%
Internet communications	13%
Database interfaces	11%
Other	23%

Sims also points out, "For the time being, Java is doing what we need to get done." And, unlike ActiveX, Java can be used in smart cards and other tiny systems.

Even some users of Microsoft's Internet Explorer browser are sitting on the fence. According to Microsoft's Web site, Continental Airlines, Inc. picked Internet Explorer largely for its "native support" of ActiveX.

But Michael Natale, Continental's senior manager of advanced technology, told *Network World* he was more interested in the price. Unlike Netscape's software, Internet Explorer is free. "When you have 5,000 seats, that adds up," he says.

Over the Internet, Continental has decided to stick with Java to reach Windows and non-Windows customers, Natale says. Internally, the company is tinkering with Java and ActiveX. For instance, the company uses ActiveX Controls to let users access on-time performance statistics.

"We control the desktop," Natale says, alluding to the Windows computers running throughout the company. "If we want to do anything with ActiveX, we can." But he adds, "We can't decide which one to make the standard right now. The winner is [probably] going to be the one that supports file transfer first."

**Lingering issues**

Of course, there are other concerns swirling around ActiveX. First, there's the terminology. Articles about ActiveX normally refer to ActiveX Controls. These are short programs transmitted across the World Wide Web that resemble Java applets and typically run inside a Web browser. But the term ActiveX actually refers to a broad class of object-oriented technologies based on Microsoft's Common Object Model (COM) and Distributed COM. And it grew out of Microsoft's OLE, a technology for allowing different software programs to communicate. "It's reasonably confusing because the name has evolved over time to mean different things," Chappell says.

Then there's the compatibility issue. In a brochure it distributed at Internet World in March, Microsoft bragged that ActiveX offers "open, cross-platform support on Macintosh, Windows, and Unix operating systems." It makes the same claim on its Web site today.

But even ActiveX supporters such as Chappell say this is stretching the truth. "ActiveX is always going to run better on Microsoft platforms" because it's designed to take advantage of features built into that operating system, he says.

And critics say ActiveX barely works on other operating systems, if at all. "I have yet to see the fully completed version of [ActiveX] on another platform," says Gina Centoni, product-line manager for Sun Microsystems, Inc.'s JavaBeans. Centoni also points out that Microsoft is relying on outside vendors to port ActiveX to other platforms: Metroworks, Inc. for Macintoshes, Mainsoft Corp. and Bristol Technology, Inc. for Unix.

Microsoft has tried to counter some of the criticism by turning ActiveX over to the Open Group, a consortium of computer vendors and users cooperating to promote standards. IDC hailed the effort in a report entitled: "Microsoft Sheds ActiveX Shackles."

But Microsoft didn't cede control of the technology. The company just offered parts of the code for public comment, much like Sun has done with Java. And the Open Group has done little to make ActiveX more open, Forrester's Brown says.

Still, ActiveX shows plenty of promise on Windows machines. So many developers are using ActiveX that Sun recently issued a utility to help developers make a Java version of the controls. But converting ActiveX Controls to Java isn't easy. Sun won't call its program a tool because developers will still have to do a lot of work for controls that take advantage of features on the Windows operating system.

"They're really two different technologies," Centoni says.

So while you might choose Java on your public Web site, ActiveX might be your ticket inside the firewall. ■



# Technology Update

**Covering:** Evolving Technologies and Standards

## NUTTER'S NETWORK HELP DESK

Ron Nutter, a Master Certified Novell Engineer and Groupware CNE in the Lexington, Ky., area, tracks down the answers to your questions. Call (800) 622-1108, Ext. 476, or send your questions to [rnutter@world.std.com](mailto:rnutter@world.std.com).

**We have a NetWare 4.11 server that has a 1.2G-byte SCSI disk from Quantum Corp. We were running low on space recently, so we decided to install another disk — a 2.1G-byte Quantum SCSI disk — as a slave. We allocated the entire disk space as a NetWare partition with one volume APPS on which we would install all the applications.**

**The problem is, whenever we install a large application, the disk causes the NetWare server to lock up and abend. I changed the disk, thinking it was faulty, but the problem persists.**

### Via the Internet

One thing you can do is make sure you have the latest drivers for the SCSI controller to which the drives are connected. Also ask your SCSI controller vendor if it has a BIOS update that you should apply as well.

You also should check with Quantum to see that you've configured both drives correctly. Because you bought the drives at different times, it's possible that the jumper or configuration could be contributing to the problem. Or, if the SCSI controller is configured for active termination and the newer drive also is supplying termination power, it could be causing the abend during larger file accesses.

You also can try a different SCSI cable to connect the drives to the controller. Although the problem you describe only shows up with larger file transfers, it could still be related to a problem in the SCSI cable.

Lastly, check the amount of free cache buffers in Monitor.nlm. If it's 40% or lower, this could be the main culprit because servers tend to get finicky when the available memory pool gets to this level. Ideally, the cache buffers percentage figure should be 60% or higher.

The rule of thumb I use when calculating the amount of memory a server should have is 16M bytes of RAM for every 1G byte of mountable disk space.

## Automated network design tools aide users in evaluating LAN/WAN product choices

*Intelligent software can help users appraise network blueprints and price alternatives.*

**By Jeff Paine**

Have you been able to keep up with competing vendor claims about IP switching architectures and their costs? Finding it difficult to know what impact Gigabit Ethernet or ATM will have on your network? Do you know what the cost of upgrading will actually be?

This constant problem of keeping up to date with the exploding technology curve comes at the same time the available talent pool of experienced net designers has evaporated. So how does the network industry sustain its growth when the number of computer science graduates in the U.S. is declining?

The keys to these problems lie in the development of a new class of knowledge transfer tools that bind the issues associated with complex network design and automate the application of embedded intelligence. This significantly scales down the level of expertise required to successfully use the tools.

These automated network design tools must account for all the factors that a top network designer considers: technology/product selection; hardware configuration; connectivity rules and trade-offs among different vendors' products; and connectivity capacity factors, for example, how many 10M bit/sec routed Ethernet segments successfully collapse into a 100M bit/sec Ethernet switch?

For these tools to be accepted by the internetworking industry as a whole, they also must be easy to use, adhere to all relevant industry standards and deliver accurate output. Furthermore, the tools should perform overall price optimization to establish a cost baseline, which will allow easy "what if" comparisons.

### The functional process

The starting point for automated design tools is defining their functional process which falls into three broad categories:

1 Network requirements definition (from user input)

1 Solution and validation of the requirements (by the automated engine)

1 Types of output (bills of material, assembly reports, detailed rack drawings and maps, among others)

The process itself is deceptively simple. With an accurately defined set of requirements, users can run an intelligent software engine that can pull pieces from a resident database of parts (chassis, boards and other com-

The ability to perform automated device design within the context of a network allows the net to be designed and validated as a system.

This approach, taken by the Caliper software from Network Tools, Inc., for example, is critical to the success and acceptance of the new tools.

Earlier efforts at producing design tools attempted to execute designs component by component, where overall optimization and validation become impossible.

knowledgeable users.

### Eliminating expert users

Correctly deployed automated design tools eliminate the requirement for an expert user by hiding the complexity of equipment assembly rules and interdevice dependencies, thus ensuring that a technically feasible and implementable design is built.

The design automatically takes into account critical elements of a multivendor environment, such as chassis/slots/bus allocation, power/backplane/ports design and interdevice dependencies, including how to connect multivendor products.

Once the correct formulas for calculating these complexities are integrated into the automated tool, the issue of ease of use becomes predominant.

The benefits of this automated approach apply to the end user and vendor communities. Because a correctly designed automated tool takes into account all of the standard attributes of various technologies and topologies, users can evaluate multiple net design and pricing alternatives without vendor involvement to see how products would fit into existing nets.

Vendors, on the other hand, benefit by giving channels and partners corporate design capabilities "in a box."

*Paine is vice president of marketing at Network Tools, Inc. He can be reached at [jpaine@networktools.com](mailto:jpaine@networktools.com).*

## Need information?

Let *Network World* provide a quick primer on an important or emerging technology. If you have an idea for Technology Update, contact Michael Cooney by phone at (508) 875-6400 or e-mail at [michael\\_cooney@nww.com](mailto:michael_cooney@nww.com).

## UP CLOSE Automated network design tools save users money and time

Design tools can help users evaluate multiple network scenarios and pricing alternatives. The tools allow the user to feed the proper information, such as LAN and WAN hardware descriptions and configurations, into an intelligent software engine, which then creates network scenarios. The user can quickly see, for example, what substituting a switched ATM backbone for a routed backbone will cost.

ponents) from single or multiple vendors.

Once an overall package has been found, the engine can populate output reports using the selected parts.

Given the relative nontechnical background of many potential users of the tools, the requirements definition section should rely exclusively on information the user knows or has access to.

The questions related to tool input must be restricted to services and infrastructure: How many sites? How many users? What desktop connectivity speed?

### Typical automated network design tools can give you:

- ▶ A complete requirements summary (documented problem definition)
- ▶ A bill of materials by location (complete shipping and unloading info)
- ▶ Detailed rack drawings down to the port level for assembly and configuration of each network component
- ▶ Wiring reports for interconnecting locations
- ▶ Printable data sheets for all network devices

Manual approaches to producing network design tools had other problems.

First, they typically targeted expert users that already knew the technologies they wanted and simply needed to electronically document their thoughts. This approach is completely counterintuitive to today's reality of the depleted market expertise and overwhelming selection of technology options.

Custom Web-based "box" configurators on the market today suffer the same problem.

They offer no guidance on selection options and, therefore, are helpful only to





## Cisco and IBM: Time to stop talking the talk and walk the walk

**H**ype. It's usually the bane of this industry's existence. But now, IBM and Cisco have the unique opportunity to do something positive with it. The question is, can they pull it off?

For the past few years, both companies have engaged in trench warfare over control of data center connectivity options. IBM touts its front-end processors and new mainframe channel-attached router as the premier choice for connecting SNA and TCP/IP nets to the mainframe. Cisco has its own channel-attached router and wants to be the company that leads SNA users to TCP/IP nirvana.

It is here, at the apex of SNA-TCP/IP connectivity, that IBM and Cisco have laid down some of the most confounding, imaginary and downright confusing sales and marketing tactics users have ever seen.

Data center managers, being a sturdy lot, have taken most of the hype generated by these two firms with a grain of salt — and a couple of Excedrin. But even data managers have their limits. At the Share user conference two weeks ago many of them expressed dread at having to try to figure out what was going on with IBM's and Cisco's SNA-TCP/IP connectivity plans.

IBM and Cisco even tried to help out Share-goers by dropping their rhetoric long enough to hold a joint session to outline what users

should look for when evaluating channel-attached devices. The session was fairly amusing because IBM's presenter was dressed as Scarlett O'Hara and Cisco's as Rhett Butler. We all know how that relationship turned out.

However, right after the session, IBM resumed the offensive by handing out an "independently audited" performance test showing that IBM's channel-attached router blew the doors off Cisco's.

Cisco immediately dismissed the test results, claiming it was never contacted about the trial and the test bed looked like it was built to evaluate adapters, not full-blown channel-attached routers. IBM dismissed similar Cisco test results a couple of months ago for almost the same reasons.

So the uncertainty and doubt continued, no real issues were addressed and users were left listening to the hype engine drone on.

This is where IBM and Cisco should put up or shut up. Since both companies have much of their user base in a frenzy, they should now take the time to run a totally open test with completely independent testers that both companies will recognize and respect.

IBM and Cisco have challenged each other publicly to a performance showdown. They should stop talking about it and do it.

*Michael Cooney, associate news editor*

*mcooney@nwu.com*

*Desktop Collaboration • Christine Perey*

## Don't take analyst views of Madge's re-org as gospel

**U**sers expect industry analysts to be objective and open-minded. But analysts also can choose to be myopic when it serves their purpose. Take, for example, the different perspectives on Madge Network's July 24 announcement of layoffs and reorganization.

The week following the announcement, Kevin Tolly offered a tongue-in-cheek analysis of the situation (NW, Aug. 4, page 32). Tolly pointed out that the formation of four autonomous, geographically dispersed divisions focusing on separate customer segments — token ring, Ethernet, videoconferencing and carriers — resembles the Madge of old. The token-ring division represents the original Madge, the Ethernet division represents LANNET and the videoconferencing and carrier divisions are Teleos.

Ron Jeffries, in the July 25 edition of his "ATM USER" online newsletter, points out that the new Madge ATM story lacks precision and concludes, "Madge failed to climb the ATM mountain. But the ATM mountain remains." Apparently, managers at Madge disagreed with Jeffries' analysis because on Aug. 12, they issued a press release clarifying Madge's ATM strategy and direction. At least one thing is clear: Madge reads what Jeffries writes.

In my opinion, the analysts raised valid points but failed to see the forest (as I see it) for the trees (they see). The reorganization will allow the "traditional" Madge business to do what it does well: dominate the token-ring market with well-engineered products.

The profiteers of this situation will be the remnants of the former Teleos. Revenue from token-ring sales will fund continued research and product development in the video networking and carrier services divisions, the areas Madge believes have high growth potential.

Madge executives are banking on the worldwide expansion of video communications to fulfill businesses' and carriers' need for a new, better infrastructure. This is consistent with one of the two components of the MadgeOne vision: integrating voice, video and data on one network.

However, Madge is now downplaying the importance of the second component of MadgeOne: Madge's role as the end-to-end solution provider. Indeed, Nigel Terry, general manager of Madge's WAVE division — comprising the video networking and carrier

services groups — tells me, "We are no longer suggesting that the total LAN/WAN solution will come from Madge. However, we are sure that voice, video and data services will be consolidated on one network, on the LAN and WAN, and we will provide the components for this integration."

Version 2 of the H.323 standard for real-time communications over packet-based networks is key to that consolidation. Madge is actively preparing for it with best-of-breed video and voice call control and video network gateway solutions.

I trust Madge will deliver superior products. However, I'm also confident that 3Com and Cisco will deliver more than adequate products complying with the H.323 standard. Make no mistake about it: Video networking is going to be big.

As for Madge's division headquarters being geographically dispersed — something analysts might find awkward when trying to sell their services to the company — I have to ask, what's wrong with that? Using its video, voice and data networking technologies, Madge's managers will not only stay in contact with one another, but also with their customers and channel organizations.

It's good to know what analysts think is important and if they believe a company will survive the next turn of events. But base your purchasing decisions on an assortment of other criteria, including service, support, value and other less tangible measures of the customer/supplier relationship that Madge has yet to address.

*Perey is principal of Perey Communications & Consulting, a multimedia communications research firm in Placerville, Calif. She can be reached at (916) 621-0468 or via the Internet at cperey@perey.com.*

## MESSAGE QUEUE

Send letters to [nwnews@nwu.com](mailto:nwnews@nwu.com) or John Gallant, editor in chief, Network World, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.

### Thinking globally

In his opinion column "Teledesic poised to provide a net for spaceship earth" (July 21, page 40), Ira Brodsky states that there are no global networks currently in place with ubiquitous access. I disagree. INTELSAT has such a system in place that provides voice, data and video services via geostationary (GEO) satellites to over 200 countries around the world, in both developed and developing areas.

Users around the world are accessing the Internet today via INTELSAT's 24-satellite fleet, often without being aware of it. The half-second round-trip delay Brodsky mentions is virtually unnoticed.



## Of e-commerce and conspiracy theories

I recently returned from the obligatory PacRim Trip from Hell, where I was supposed to lay out where electronic commerce is and where it is most likely to go. In every port, I was barraged with so much misinformation and overheated hype that it seemed as if the CIA must be involved. The misinformation didn't originate in these global companies — it came from the good ol' USA, from my brethren in the Guru industry.

Yes, I believe the Internet is going to be the most important technological development since the semiconductor, and Internet commerce will be huge. But I also know that the backlash from unreasonable expectations is going to slow it down.

Want some examples?

The market today for music distributed over the Internet is estimated at \$20 million. Yet the largest company in the industry will struggle mightily to do \$6 million and stretch to break even. Despite this, industry experts have anointed the Internet music industry with a revenue forecast of \$1.8 billion by the year 2000. Are they nuts?

Where's the logic trail? They cite The Artist Formerly Known As Prince (TAFKAP), who recently announced that henceforth his new music will be available only over the Internet or via 800 numbers. With all due respect to TAFKAP, who is the only major musician to disdain record labels and retail stores, the day when we start taking advice from such kooks is not yet upon us.

I am willing to concede an interesting data point and possible trend. However, I am unable to back up the faulty logic that 10% of all music purchased soon will come to us electronically.

Projections of Internet commerce hitting \$222 billion by the year 2000 are enticing if you have a hidden agenda, such as raising venture capital, but deadly if this number is really part of your business plan. The logic goes something like this: In 1980, there were 1 million PCs in the world; by 1995, there were 150 million. Today, it's up to 222 million. In 1995, there were 1 million people connected to the Internet; an estimated 150 million will be connected by the year 2000. Ergo, three PC years equal one Internet year.

If this year — the base year — Internet commerce amounted to \$10 billion, isn't it simple logic that the market will grow to \$220 billion when the number of Internet-capable PCs hits 220 million? No. Simple extrapolations will get you into trouble every time.

The fallacy of large numbers states that if you take a "reasonable" small percentage of a large number, you will get a logical but wrong solution. If the average Internet-connected PC generates \$1,000 per year in Internet commerce, then all you need do is take that constant and multiply it by the number of Internet-connected

PCs in some future year to get the amount of Internet commerce generated in that year? Ye gods!

Look, let's count apples and apples. There will be three forms of electronic commerce, and let's not confuse the three. First, there is the old standby, electronic data interchange. EDI has been around for 25 years, the same as e-mail and the Internet. Its main assets are that it is here right now and works. This year, \$850 million will be spent on EDI software, translators and value-added network and integration services. Consequently, the EDI market is expected to grow 20%.

Eventually, EDI will migrate to the Internet, and companies such as GE are building joint ventures with Netscape to facilitate that. This second form of electronic commerce, EDI over the Internet, is still in its infancy.

The third form of electronic commerce, electronic commerce to consumers over the 'Net, or Internet commerce, is rife with cute start-ups such as Amazon.com and Virtual Vineyards, as well as established companies such as Dell, which sells \$1 million worth of PCs over the 'Net per day.

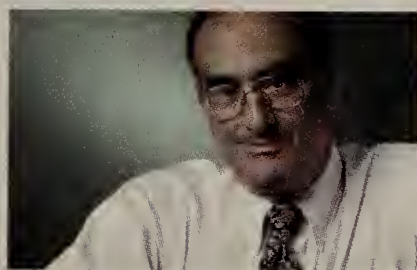
Yes, electronic commerce — particularly Internet commerce — has potential. What bothers me is the liar's poker that far too many play with the numbers, talking about things that might be as if they were and the self-proclaimed gurus who shrilly sanctify impossible-to-meet numbers.

Let's be honest. We don't know exactly how big the Internet commerce market will be. We can take some reasonable assumptions about numbers of Internet-ready devices, Internet availability and connectivity — and come out with god-awful projections that are greater than the gross national product of half the developed world.

The hype machines are working overtime. I know of a half-dozen companies that are building Internet kiosks for airports because of some obscure sentence in Bill Gates' book, just as in the 1980s a number of companies started building ships to collect "magnesium nodules" on the ocean floor because Howard Hughes had built the Glomar Pilot and the Glomar Explorer ships to allegedly do just that. Except Hughes had been using that story as a cover; he had a CIA contract to recover a sunken Soviet sub. But the Hughes clones took the cover story as truth and built it into their business plan logic.

Wait a minute — since the CIA was spreading misinformation about magnesium nodules and the misinformation about Internet commerce looks like a CIA fabrication, do you think...

Anderson is founder and president of The Yankee Group, a Boston-based consultancy. He can be reached at (617) 956-5000 or via the Internet at [handerson@yankeegroup.com](mailto:handerson@yankeegroup.com).



able to these users.

I also take issue with Brodsky's statement that today's GEO satellites make "voice conversations awkward and real-time data communications almost impossible."

Not only does INTELSAT support innumerable voice and data networks full-time, but all the major fiber-optic cable operators use INTELSAT satellites for backup.

As push technology develops and techniques such as IP Multicast become more prevalent, GEOs will have advantages over low-earth orbit systems in terms of the simple ability to serve multiple users within a single beam.

As Brodsky correctly points out, systems such as Teledesic will need their entire fleet to ensure continuous service. INTELSAT, because of its satellites' positions in geostationary orbit, can provide global coverage with just three spacecrafts.

Gary Smith

Vice president, sales and marketing  
INTELSAT  
Washington, D.C.

### Not all bad

Daniel Briere and Christine Heckart's column "No such thing as global frame relay?" (July 28, page 30) gives readers a bad impression of the state of global frame relay services because it's based solely on their unpleasant experiences. I recently designed and implemented a global frame relay network and had a very different experience.

About a year ago, I started researching the pros and cons of frame relay as a viable WAN technology to reliably deliver our data overseas. When I got a basic RFP together, I called the Big Four: AT&T (which at the time provided our voice services), WorldCom, Sprint and MCI

(which provided our existing private-line WAN).

AT&T and MCI were the quickest out of the gate to present their respective cases. Sprint was completely uninterested. But the real surprise was WorldCom, which provided the most professional, technically competent and price-competitive proposal of the carriers.

AT&T was good at presenting its case but lost out on price and lack of facts and stats about its frame relay network performance. Then it was down to MCI and WorldCom.

WorldCom tried its best to get its foot in the door, but MCI was extremely eager to expand its existing presence and made a very attractive offer. Because I was experienced and satisfied with MCI's customer service on the WAN side, MCI got the deal.

We now have ports and permanent virtual circuits linking New York, London, Hong Kong

and two sites in Tokyo, with a third scheduled to come online later this year. All in all, it was an invaluable experience learning about frame relay as a viable WAN technology as well as what

the major carriers had to offer.  
Robert McKenna  
Vice president, global network engineering  
Sumitomo Bank Capital Markets  
New York

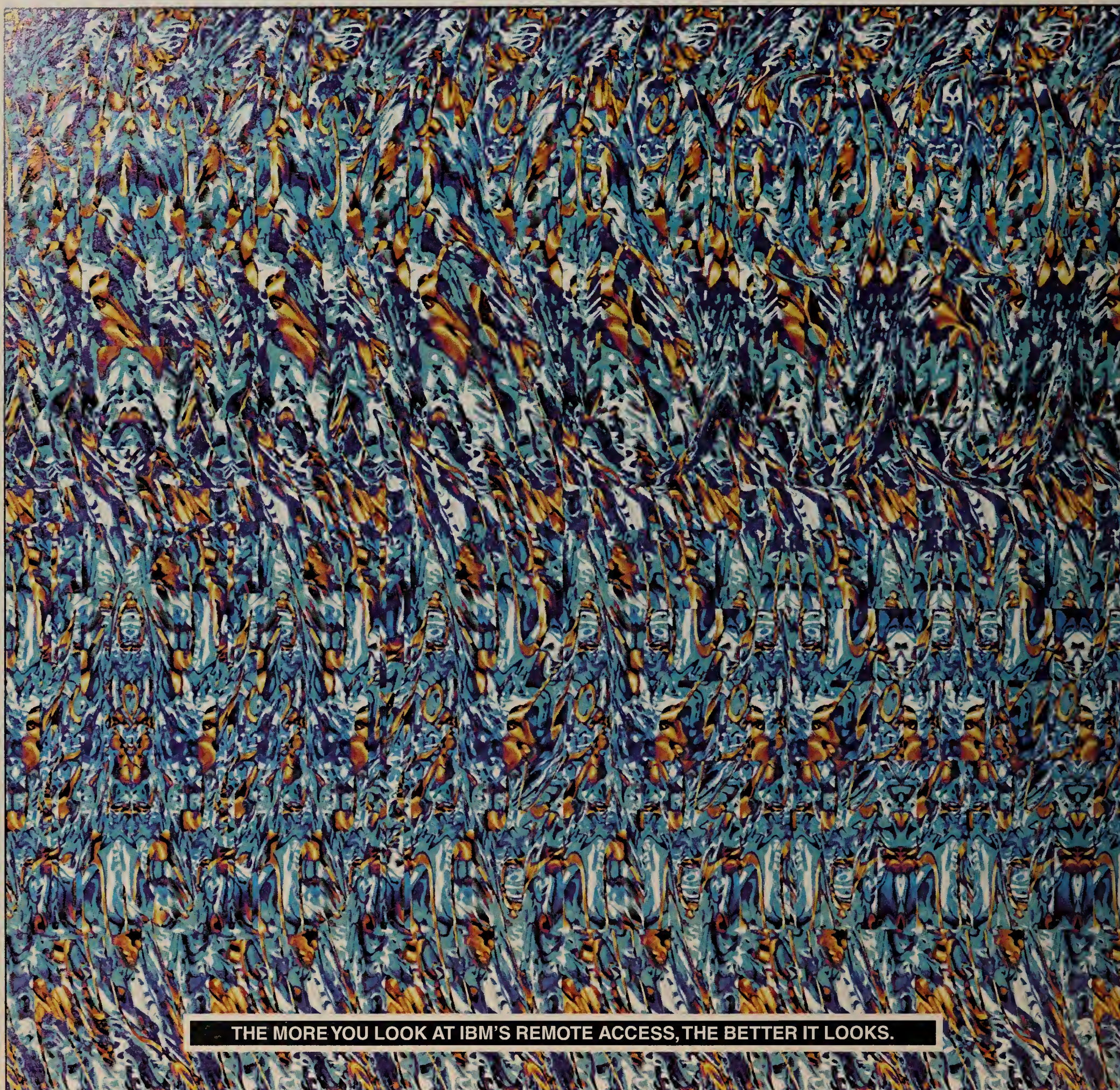
### Teletoons



Phil Frank and Joe Trois @babasigala.com



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# Serving up support

By Tom Stenson

**R**aise your hand if you love calling your vendor's support hot line. Ahh, yes. Calls stacking up in the queue. The music on hold. Describing your problem in detail over and over as the frazzled help desk personnel try to nail things down. The tentative answers. The inevitable callbacks. C'mon, what's not to love?

But there is an alternative — Web support. A growing number of vendors are providing service and support through their Web sites, with the goal of making it easier for you to find answers to your questions, report problems or download software — all so you can get your problems resolved more quickly.

We decided to see for ourselves how some of the leading internetworking companies stack up in using the World Wide Web to provide better support for their customers. We looked at the support offerings of Ascend Communications, Inc., Bay Networks, Inc., Cabletron Systems, Inc.,

Cisco Systems, Inc. and 3Com Corp. And what we found, although far from nirvana, was encouraging news for overburdened network professionals.

With Cisco leading the way, internetworking vendors are rolling out some snazzy Web-based support services. Cisco is augmenting the basic software download capabilities long offered over the Internet with advanced services such as trouble-ticket and service order tracking, bug tracking, question and answer forums, an array of configuration utilities and intelligent troubleshooting engines.

The other vendors don't quite match Cisco's

breadth of services, but they all have a variety of useful tools and are continually adding functionality to their sites.

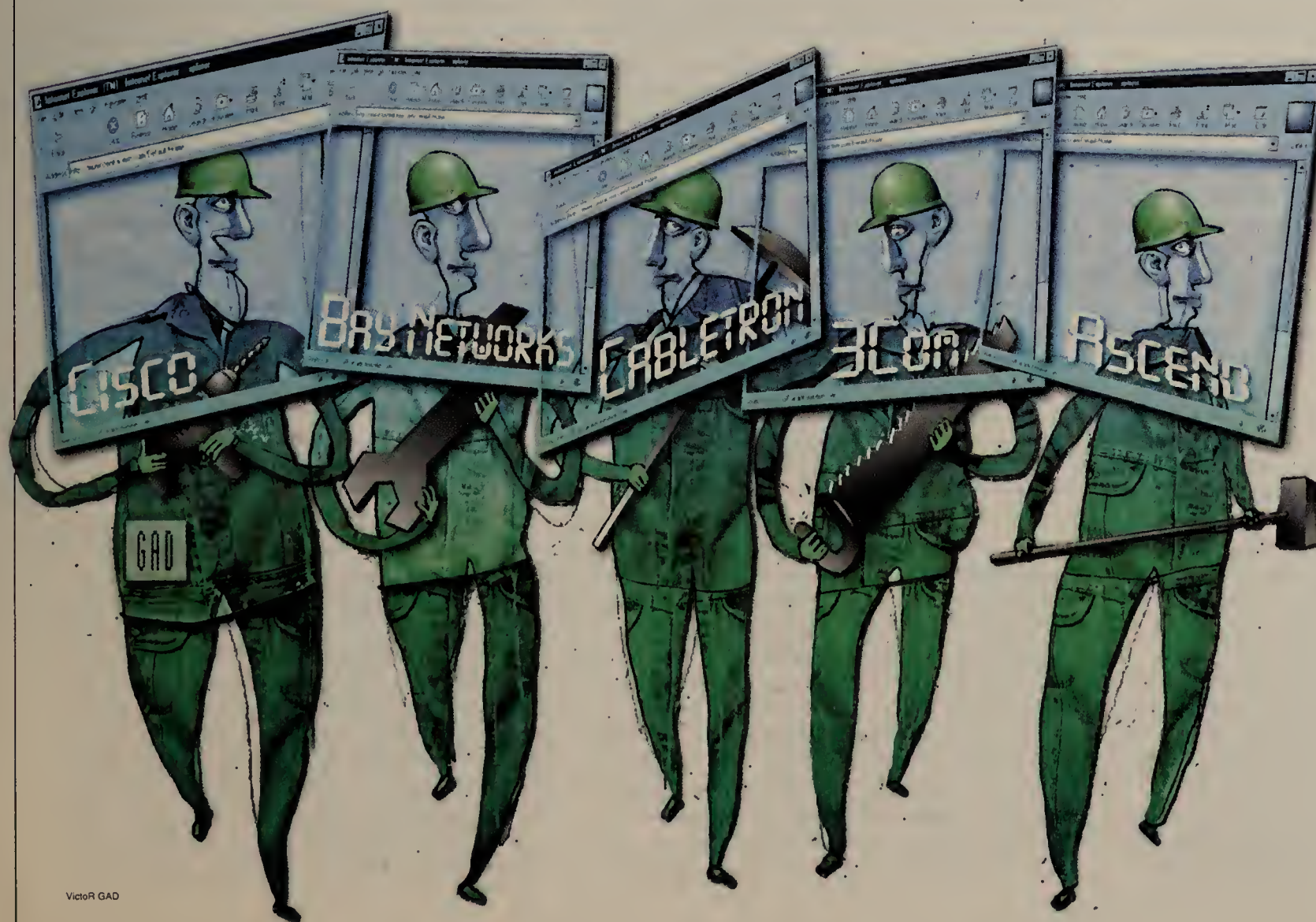
Keep in mind that these sites are in the formative stage and remain works in progress. The vendors need to refine the sites to get problems resolved more quickly. Among other things, faster response to e-mail and chat forums that give customers real-time access to technicians would be powerful improvements. Expert system software that solves problems without support staffers would benefit customers and vendors alike.

But don't let those shortcomings keep you from using the Web as a source of aid and comfort today. These vendors and others offer a wealth of information and resources, and bypassing them only sacrifices time and efficiency.

### Software updates

Network vendors have been using the Internet for years to transmit software updates and patches to their technology-savvy customers. Three or four years ago, this was done by logging on to File Transfer Protocol (FTP) sites and accessing directories of cryptically named files — not for the technically faint of heart.

Today, the Web makes it easy for vendors to deliver software in a customer-friendly manner. Powerful search engines make finding relevant updates quick and painless. The one potential gotcha is that a user logon tied to a support contract is generally required to access software downloads. That ensures only paying customers



Victor R. GAD

### TIPS

■ **Be prepared on your first visit to spend some time getting accustomed to the site.** If you invest a little time at the beginning, it will save you time in the long run.

■ **Take the time to get an ID, and get access to everything your support contract will allow.** Many of the more interesting and useful features on these sites can only be accessed via user logon.

■ **Some Web sites can be tedious to navigate.** Create bookmarks to areas you access frequently.

■ **Do the obvious things when downloading large images.** Pick times of the day when the sites are likely to be less busy, and when there is a choice of FTP sites, pick the site geographically closest to you.

■ **If the site has a good search engine, use it.** Don't waste a lot of time trying to navigate through pages and pages of irrelevant information.

■ **If you can't find something you believe is there,** send an e-mail to the Web site administrator to find where the information is located.



have access to certain software modules.

By and large, the vendors we reviewed all did a respectable job in this area. Most offer an extensive array of software downloads, including associated release notes and product bulletins.

Bay's site has a couple of limitations worth mentioning, primarily because they highlight the relative immaturity of many of the services available on these sites. Although software for most of Bay's hubs and switches is available via the Web, software for its core router line is not. Customers still have to call a technical support engineer to obtain the code from an FTP server.

There also is a quirk in the way the download process works on Bay's site. Many of the downloads take 20 to 30 seconds to start after the user clicks on the download hotlink. For example, when attempting to download software Version 2.0.1 for Bay's 28200 Ethernet switch, it took a full 30 seconds from the time "Download" was clicked until the actual download began. During this time, no feedback was given to indicate the system was working. The novice is likely to think nothing is happening, give up and go on to something else, assuming the feature doesn't work.

While you need a service contract and a user ID to try many of the features of the Web service and support sites we reviewed, you can point your browser to Fusion for a sampling of these sites' capabilities.



[www.nwfusion.com](http://www.nwfusion.com)

Quirks like this can lead to a false impression of the site. More important, they can waste your time. When you find a problem like that, you should report it to the site operators via the online feedback facilities provided. That will push the vendor to iron out the wrinkles in the online support process.

## Problem reporting, trouble-ticket tracking

Second to software downloads, the ability to open, query and update trouble tickets is the most useful tool for customers. With this relatively new capability, customers can view the entire history of open and resolved tickets, seeing each update made by technical support personnel. If nothing else, customers can find out whether anyone is actually working on the problem and just who is waiting for whom in the problem resolution process.

Trouble-ticket functionality is tied to a customer ID and, therefore, requires logon. Cisco, Bay, Ascend and the U.S. Robotics arm of 3Com allow customers with support contracts to open, query and update trouble tickets online. The 3Com and Cabletron sites do not support this capability. Generally, tickets are opened with mid-to low-severity codes, and a phone call is necessary to escalate the priority.

Cisco's work in this area is worth noting. In addition to viewing trouble tickets, a customer can view the status of return material authorizations (RMA) and service orders, right down to the Federal Express, DHL or UPS tracking number for replacement parts, with hotlinks to the shipping company's package-tracking page.

Cisco and some of the other vendors also allow information such as error logs and configu-

ration files to be pasted into the trouble ticket. Technical support commonly asks for that data, and this type of interface facilitates the information transfer.

Although Cabletron does not support online trouble tickets, it provides a convenient online form for requesting an RMA. Cabletron also has a good interface for contacting technical support via e-mail.

The company's goal is to answer e-mail within 24 hours, but it took more than three business days for us to get a response to a relatively straightforward question about the SmartSwitch 6000. That raises an issue of staffing that all vendors must address. If vendors want customers to avail themselves of Web-based support, they must ensure that Web-provided services are crisp and prompt.

## Technical help online

Online technical help can take a variety of forms. At its most basic, it includes access to information needed to configure devices or solve problems. All the sites we reviewed offered some form of access to release notes and product bulletins, as well as technical tips. By itself, this is quite useful, but some vendors go beyond the basics with additional capabilities.

Case in point: Cisco's Bug Toolkit, which allows a customer to search Cisco's bug database by keyword or bug ID and create one or more "Watcher Bins" in which updates on selected bugs can be stored. Agents can be set up to search for bug updates that meet certain criteria and store those alerts in a Watcher Bin. Updates are presented to the user on the home page and also can be e-mailed or faxed. The update frequency for e-mail and fax can be set to "notify on new alert" or "summarize alerts weekly."

Cisco also provides an Open Forum area where customers can ask questions that can be answered by other customers or Cisco personnel. There is a special forum available where people who have achieved the Cisco Certified Internetwork Engineer (CCIE) rating can chat and assist each other in real time.

That sounds good, but it's how things work in practice that counts. Recently, one of our CCIE-rated engineers needed to provide an answer to AT&T about the type of framing supported by the Cisco ATM Interface Processor. He asked this question on the CCIE forum. No answer was ever given, so he reverted to calling a local systems engineer. A real-time facility like this needs to be staffed with some support engineers so questions do not go unanswered.

Cisco and 3Com offer a troubleshooting engine, which asks the user questions in an attempt to zero in on the solution to a problem. 3Com's engine currently is limited to a small subset of 3Com products, although one can expect it to grow over time. Cisco's engine is reasonably useful today and should get better over time. This type of functionality is worth keeping an eye on.

Cisco also offers some tools to assist in the con-

# Score Card

	Software updates (30%)	Problem reporting/trouble-ticket tracking (25%)	Technical help online (25%)	Technical reference information (20%)
5.0 Cisco	5	5	5	5
3.0 Ascend	3	4	2	3
3.0 Bay	2	4	3	3
2.8 Cabletron	4	1	3	3
2.8 3Com	4	1	2	4

Scores are based on a scale of 1-10. Percentages are the weight given each category in determining the overall score.

figuration process. More important, the company provides an extensive set of sample configurations for a variety of products and environments, complete with topology diagrams and annotations. Ascend plans to offer an online configuration tool in the future and currently supports a static test lab, which users can access remotely to test configurations and performance.

## Technical reference information

The technical reference information available on the reviewed vendor sites ranges from product documentation — including complete sets of user manuals and configuration guides — to white papers and references to external resources, such as requests for comment and suggested reading. All the vendors do a good job in this area, and most offer the information in HTML or Adobe Systems, Inc.'s Acrobat portable definition format.

## The big picture

Based on our experience in sampling these sites, it seems clear that vendors want to make Web-based support a significant element of their overall service strategies. Their motivation is, of course, pragmatic. If done right, support provided via the Web can increase customer satisfaction by reducing configuration errors and problem resolution times and save money by reducing the number of live bodies required to provide support. The cost savings and efficiencies can be significant for vendors.

If you are a Cisco customer, you have access to a tremendous resource. Cisco has made a major commitment to the Web as a way of doing business. This commitment actually extends well beyond service and support to include Web-based order and invoice tracking, product configuration and pricing. As a result, Cisco's Web site is a benchmark against which the rest of the industry can be judged. It is well organized, clean and reasonably easy to navigate. Performance generally is crisp, even over a 28.8K bit/sec dial-up link.

Bay's site is aesthetically pleasing and well organized. It handles the basics well and does a good job with trouble-ticket management. If the concerns about software downloads are addressed, that feature will become a real strength. The site tends to be a bit slow, perhaps because it employs some advanced Web technologies, including Java.

The Cabletron site provides a wealth of technical information and software updates, as well as good access to company departments via e-mail. The lack of support for trouble-ticket tracking,



online forums and other advanced features is a negative, but expect Cabletron to add this functionality over time.

3Com and Ascend recently merged with other major companies — 3Com with U.S. Robotics and Ascend with Cascade Communications Corp. — and each runs two Web sites for the time being. 3Com has done a little bit more than Ascend to integrate with its partner by implementing some hotlinks between the sites. As with Cabletron and Bay, 3Com and Ascend do many of the basics well and provide a lot of value but need to invest in some more advanced functionality.

#### Ways to improve

The following are additional capabilities or refinements we'd like to see in Web-based support services:

#### ■ Faster turnaround time getting questions answered

It would be nice to ask a question and get it answered immediately — at least for the simple questions. That requires some sort of chat forum that is well staffed by technical support personnel.

Companies could have a forum for basic questions open to all users and a special section supported by senior technical staffers accessible only to customers with significant support contracts. Questions could be prioritized by the size of the customer, which would be known by the user logon. In many ways, this runs counter to what vendors are trying to do with the Web, namely reduce the bodies necessary to provide support. But we're viewing this from a customer's point of view.

#### ■ Enhanced user profiles

The process of obtaining a user ID for these sites typically involves filling out an online form that asks for the support contract number and name and address information. If there were a way to add information about which products and issues the user is interested in following, an expanded user profile could be built.

From the service contract number, the vendors already know which products the customer currently uses. All this information could be used to present the user with a special page of links to relevant information updates upon logon. 3Com does something along these lines by allowing users to create agents that search the Web for information that meets specified criteria. The beginnings of this type of functionality also exist in Cisco's Bug Toolkit.

#### ■ Enhanced troubleshooting and configuration engine

The more help available without human intervention the better (you know us techs, we relate

## Net Results

VENDOR	PROS	CONS
Cisco	<ul style="list-style-type: none"> <li>▲ Extremely innovative</li> <li>▲ Rich in advanced features, including trouble-ticket tracking, RMA/service order tracking, troubleshooting engine, configuration utilities, Q&amp;A forums, bug trackers</li> <li>▲ Excellent access to software updates and technical reference information</li> <li>▲ Good performance</li> </ul>	<ul style="list-style-type: none"> <li>▼ A lot there. Takes time to get used to</li> </ul>
Bay	<ul style="list-style-type: none"> <li>▲ Very nice trouble-ticket tracking capability</li> <li>▲ Well organized, clean</li> </ul>	<ul style="list-style-type: none"> <li>▼ Availability of software for download is limited</li> <li>▼ Performance tends to be slow because of the amount of data transferred with some Web pages</li> </ul>
Cabletron	<ul style="list-style-type: none"> <li>▲ Good, structured e-mail access to all significant support functions</li> <li>▲ Good database of tech tips</li> <li>▲ Good search capability</li> <li>▲ Good availability of user guides and documentation</li> </ul>	<ul style="list-style-type: none"> <li>▼ Cannot open or track trouble tickets online</li> <li>▼ Few advanced capabilities, such as forums and troubleshooting engines</li> </ul>
3Com	<ul style="list-style-type: none"> <li>▲ Good availability of software updates and white papers</li> <li>▲ Well organized</li> <li>▲ A lot available with logon</li> <li>▲ Beginnings of a troubleshooting engine</li> </ul>	<ul style="list-style-type: none"> <li>▼ No trouble-ticket reporting or tracking</li> <li>▼ Still maintain two sites (3Com, U.S. Robotics)</li> <li>▼ Limited advanced capabilities</li> </ul>
Ascend	<ul style="list-style-type: none"> <li>▲ Good availability of software downloads</li> <li>▲ Trouble-ticketing open, query and update</li> <li>▲ Good array of technical information</li> <li>▲ Unique capabilities (Static Test Lab availability)</li> </ul>	<ul style="list-style-type: none"> <li>▼ Little integration between Ascend and Cascade sites</li> <li>▼ Cascade site fairly limited</li> <li>▼ Not a lot of innovation</li> </ul>

better to computers). This involves building more intelligence into software engines. On the configuration side, it would be nice if you could tell the system what protocols and hardware you run and what functionality you need and let the system suggest an appropriate revision of code and some sample configurations. The system also could flag potentially threatening code bugs.

When it comes to troubleshooting, it would be useful to be able to upload configuration files along with a description of your problem and let the troubleshooting engine flag configuration mistakes. This is similar to the capability offered by Cisco's Netsys product, which is not accessible via the Web and is not free. Intelligent support engines are beginning to appear on the more leading-edge sites.

#### ■ File attachments within trouble tickets

Support for file attachments within online trouble tickets would be a boon. This would save customers from trying to cut and paste information into the problem description fields on the trouble-ticket screen.

#### ■ Speed, speed and more speed

You can never have enough speed. Using the Web for support is all about getting faster access to information, so it is important that performance and site navigation be very crisp. Because many people still access this information via dial-

up, vendors may have to sacrifice a little glitz for performance, at least for the time being.

#### ■ Better search engines

Many sites could benefit from specialized search engines more tailored to finding the types of information most often accessed on the site.

#### What you should do now

The Web-based service offerings of the major internetworking vendors have evolved to a point where it is in your best interest to spend time learning how to use these services. A little time invested in getting a user ID and learning to navigate a site will pay big dividends in time saved.

Because customers and vendors stand to benefit tremendously from the use of the Web, it makes sense for both sides to work together to improve the services available. Vendors should consider convening customer focus groups aimed at improving Web site functionality.

Some companies lead, and some follow. If your vendor's service offerings don't match up to what you see on the best sites, let the company know. You can't afford to partner with a company in the slow lane.

*Stenson is the CEO of MS Systems, Inc. in Braintree, Mass. He can be reached at [tstenson@mssys.com](mailto:tstenson@mssys.com).*

#### WEB-BASED SERVICE/SUPPORT MUST-HAVES

- ▶ **Speed, speed and more speed.** If the site is sluggish, it doesn't matter how good the functionality is.
- ▶ **Comprehensive availability of software updates.** This is the primary value derived from the support areas of most vendor Web sites.
- ▶ **Trouble-ticket creation and tracking.** The Web is becoming an increasingly popular way for customers and vendor support technicians to share status updates on trouble tickets.
- ▶ **Comprehensive access to technical information.** This includes online and downloadable documentation and manuals, troubleshooting tips and general reference material.



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# Building the next 'Net

*Commercial traffic will help universities pay for Internet 2.*

By Charles Bruno

**J**oel Hartman is waiting for a thumbs-up from the National Science Foundation (NSF) on his request for a cool \$2.8 million.

Hartman, vice provost for information technologies at the University of Central Florida, in July petitioned the NSF on behalf of 11 Florida universities for funds to build FloridaNet, a statewide infrastructure intended to connect schools and ferry research data from Internet 2 member universities to a national high-speed backbone. To help pay the bills, Hartman wants to let commercial companies use the net to support distance learning, telemedicine and other applications.

"We hope to meet the research requirements of Internet 2 but design the statewide network to carry our own commodity traffic over the same infrastructure," Hartman says.

Hartman's plan is playing itself out in numerous other states — California, New York and Wisconsin, to name a few. Universities are coming up with more reliable and cost-effective ways to connect to various service providers.

Internet 2 is a collaborative effort spearheaded by more than 110 U.S. universities, in concert with the private sector and federal government, to develop next-generation Internet technology and applications. Universities will use the network as a proving ground for bandwidth reservation and quality-of-service offerings that ultimately will be adopted by commercial Internet service providers.

But traffic on Internet 2 links is limited to network application development projects awarded under the NSF's High Performance Connections program. In essence, that means the backbone is off-limits to any traffic unrelated to those application projects.

"If the states can subdivide their networks so the different traffic types don't interfere with Internet 2 project data, then it's a win for everybody," says Mark Luker, director of the NSFnet program. Luker also is the ranking NSF official in charge of the High Performance Connections program that awards NSF grants to Internet 2 members.

That's certainly part of the plan in California. David Wasley, a strategy planner for the University of California Office of the President, says the state wants to carve out bandwidth to experiment with ATM-class services not permitted under the NSF's very high-speed Backbone Network Service (vBNS) guidelines. It also wants to support distance learning applications and woo businesses to outsource their training to local schools.

Moreover, the state schools hope to partner with the private sector on joint product develop-

ment using a proposed Synchronous Optical Network (SONET) dubbed the California Research and Education Network-2 (CalREN-2).

Jim Luckett is president of NYSErnet in Syracuse, N.Y. By the fourth quarter, Luckett hopes to have an OC-12 link running from New York to Buffalo, which will be used in part to lure business traffic. "We want to spin out new services as quickly as possible, quickly mount audio/video services and establish trials with vendors for new switching services," he says. Businesses may be able to tap into some of the first bandwidth reservation services before they become available on the commercial Internet.

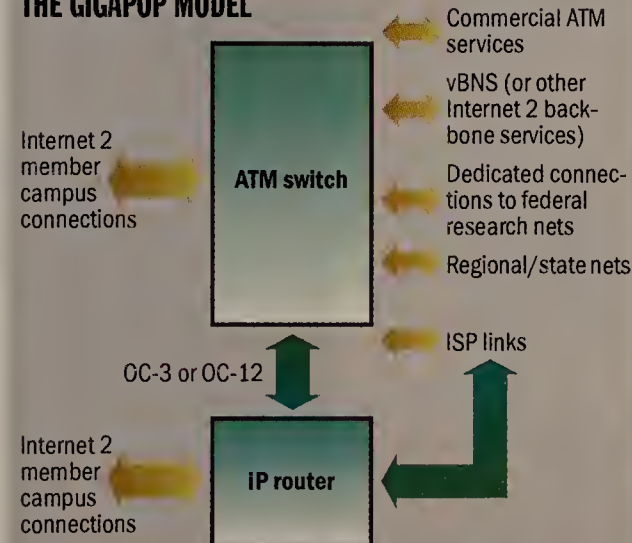
Such ambitious efforts also may give rise to new types of Internet connection points. For example, Wasley says the California university system wants to multihome its present Internet services to each of the six major ISPs — a costly proposition. "We would very much like to have a regional Internet shopping mall we can plug into," he says.

Essentially, Wasley is talking about the evolution of a new form of service provider. Users link into a central site for access to any of several ISPs — the chief benefit being protection against an outage at any single ISP because traffic can be rerouted at the site to another on-premises provider. Moreover, users could take advantage of different ISP rates for various services.

At least initially, these so-called Internet shopping malls are but wistful dreams.

But they may spawn successfully from gigapops that will bridge Internet 2 backbones to university feeder networks.

## THE GIGAPOP MODEL



SOURCE: INTERNET 2 CONSORTIUM, WASHINGTON, D.C.

GigaPOPs essentially amount to high-speed interconnect points where several Internet 2 member universities patch into the NSF's vBNS, which is the initial Internet 2 backbone. Alternatively, a gigapop could be a site where data is aggregated for transport to a vBNS point of presence (see graphic).

GigaPOPs provide Internet 2 member universities with a fair amount of latitude to connect to other wide-area services, says Guy Almes, chief engineer of the Internet 2 task force overseeing architecture development.

One example is universities that want to connect to federal research networks such as the Department of Energy's ESnet or the NASA Research and Education Network. Almes emphasizes that such an arrangement has not been finalized, and it is up to individual universities to establish their own gigapop alliances. Another option is for gigapop operators to invite commercial ISPs to establish a presence at a university gigapop. "GigaPOPs will provide ample economic opportunities for universities to share the costs of multihoming to different ISPs," Almes says.

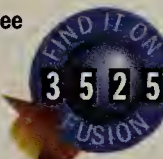
At present, 20 to 30 gigapops are planned for the first phase of Internet 2, some of which are expected to become operational this fall.

"Everyone wants to build a gigapop, but not everyone can afford to," says Tad Pinkerton, deputy director of the division of Information

Technology at the University of Wisconsin. "A number of institutions will have a hard time anteing up the half-million dollars a

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year forecast to support this."

The University of Wisconsin, for one, isn't building its own gigapop. Instead, it's hauling traffic across OC-3s from its Madison and Milwaukee campuses down to Chicago, where it will tie into a gigapop managed by the University of Chicago and Northwestern University.

But more ambitious proposals are on the table, including CalREN-2. California is looking for \$3.85 million from the NSF to build two major OC-48 SONET ring clusters in the Los Angeles basin and the San Francisco Bay area, each supporting a distributed gigapop. Each gigapop would be connected to the vBNS, but not to each other. Future plans even call for a third gigapop and SONET facility in the San Diego area.

To fund such efforts, the NSF provides seed money that member universities must match, which covers the first two years of a project. After that, the university systems are on their own, placing a premium on their ability to work with the commercial sector to raise revenue.

But that hasn't blurred the ultimate goal of Internet 2 member universities. "We want to get back to the leadership of developing new services and turning them over to the commercial world," Wasley says. Ultimately, the state hopes to dismantle CalREN-2 in favor of purely commercial services. "We have better things to do, like educating students," he says. ■



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Continued from page 1

software and proxy cache software, BorderManager gives IntranetWare administrators a complete, easily managed set of TCP/IP security and caching tools.

Though all the products work well, there are integration problems. For example, the NetWare Connect remote access application still has its own management program, while the new proxy, cache and gateway features are managed with the NWAdmin program.

BorderManager includes basic firewall functions: It blocks unknown IP addresses and filters on the packet level (IP addressing and control) and the circuit level (TCP-level session control). BorderManager also foils address spoofing. The product's multiprotocol routing utilities let you use the server as a bastion host, monitoring all traffic to and from your network. Fully integrated inside the NWAdmin, a trial copy of Microsoft Systems Software, Inc.'s Cyber Patrol, set to expire after 45 days, provides all the filtering choices any paranoid manager could want.

BorderManager's Proxy Cache Server provides noticeable speed improvements over an uncached system by using multiple caching techniques. Its VPN component, with up to 128-bit encryption for domestic use, is competent, if not flashy.

BorderManager supports remote clients with NetWare Connect, which offers PPP Remote Node Service and multiprotocol router functions. Up to 128 asynchronous ports can be controlled by the server for dial-in and dial-out use by clients.

Netscape Communications Corp.'s Navigator 3.X is included in the client software set. A NetWare/IP version for IntranetWare and the IPX/IP Gateway software are included, although these are just upgrades of the existing IntranetWare software.

Novell also includes a run-time version of IntranetWare for sites without an existing IntranetWare server. It comes with Novell Directory Services (NDS) and the NWAdmin tool. Watch out, though: The updated NWAdmin program is filed in the PUBLIC-WIN95 directory rather than in PUBLIC. So if you already run NWAdmin, change your shortcut or you'll wonder why the upgrade didn't take.

Many of BorderManager's features are especially advantageous for Novell's installed base. For example, you can pick NDS clients from a list when creating rules, rather than typing in IP addresses or Domain Name System (DNS) host names. Using NDS, BorderManager controls access rights and security privileges of all users — not just those in any one domain — across the entire network from a single workstation.

Non-NDS clients can be controlled with the utilities, but you must enter their information by hand. Novell plans to allow NDS to absorb TCP/

## Net Results

PRODUCT/PRICE	PROS	CONS
<b>BorderManager</b> Novell, Inc. <i>Price: From \$2,495 for 5 concurrent network users to \$76,000 for 5,000; add-on server kit \$1,995</i>	<ul style="list-style-type: none"> <li>▲ Adds the missing pieces Novell needs to make NetWare a complete Internet solution</li> <li>▲ Proxy Cache Server uses new technology for higher performance</li> <li>▲ Caches and controls all NetWare and IP systems on the network</li> <li>▲ Leverages NDS for one-stop administration (after initial setup)</li> <li>▲ Virtual private networking routes encrypted network traffic over the Internet</li> </ul>	<ul style="list-style-type: none"> <li>▼ Multiple utilities are still not a cohesive unit</li> <li>▼ Tired C-Worthy interface still required for server configuration</li> <li>▼ Installation rather involved and somewhat confusing at times</li> </ul>

IP clients, but products are not available yet.

### NetWare-familiar functions

BorderManager adds three pages to NWAdmin: Border Services Setup, Virtual Private Network and Outgoing Rules.

With the Rules page, you can control Internet access for users, groups and container objects, as well as the physical server running the BorderManager software, using NWAdmin. Because security restrictions can change according to the time of day, BorderManager implements the same hour grid used in IntranetWare 4.11 to block time. Rules that control access to what your organization deems nonproductive Internet sites apply to all users regardless of protocol.

BorderManager also monitors real-time activity, such as current IPX/IP sessions, cached sites rated by activity and how long each utility has been running.

You can build VPNs by exchanging software keys between servers and network managers. One master server can organize several slave servers. All packets traveling across the Internet or intranet are encrypted using RSA keys of up to 128 bits domestically and 56 bits for export.

The Border Services Setup button in NWAdmin lets you set IP addresses and start and stop the various proxy services and gateways.

### Beyond NWAdmin's Border

BorderManager's IPX/IP Gateway first appeared as a separate product and is now bundled with IntranetWare. The new and improved IPX/IP Gateway component of BorderManager is really a subset of the Novell IP Gateway. Also included is Network Address Translation, in which users with TCP/IP addresses not registered for Internet use are translated to legal IP addresses when going out to the Internet.

The IPX/IP translation seems to have all the bugs worked out and performed flawlessly under

every TCP/IP application we tried, including multiple browsers, e-mail clients and terminal emulators. The Novell software can reference existing DNS servers or run its own DNS server if necessary.

Another feature of the Novell IP Gateway is its ability to register, track, control and monitor pure TCP/IP traffic through BorderManager. Even non-NetWare IP stations route through the BorderManager server to provide some control. BorderManager can control clients connected through NDS, DNS host names, IP addresses or complete subnetworks.

### Proxy Cache Server

We observed a noticeable improvement in browser response time after installing Proxy Cache Server, and this was confirmed by other network users unaware of the new software. Because the Proxy Cache Server is on the same local network as the requesting client, cached information is delivered at network speed, rather than Internet speed. All clients need to do is fill in the "proxy server ID" blank in their Web browsers to route traffic through the Proxy Cache Server. NetWare and non-NetWare clients are supported exactly the same by the cache server.

The Proxy Cache Server also provides Web server acceleration by caching requests to your Web server. Its Web Server Accelerator component handles all requests to your Web server, blocking outsiders from reaching the server directly.

Not only do clients get their Web pages faster, but because the real Web server is hidden by the BorderManager server, you also increase your security. One Web Server Accelerator can pretend to be multiple Web servers, speeding response for all.

Another new caching technology effectively caches an entire client network. How does this work? If a client requests a Web page and the local cache server can't help, it queries neighboring cache servers as well as those on the next level. These "parent" servers hold retrieved information for all cache servers below them and their neighbors.

## TO INFINITY AND BEYOND

BorderManager beta software was the front end for the NASA Web server during the Mars probe viewing frenzy, adding performance and keeping the NASA server from being overwhelmed.

## Score Card

	Security (30%)	Management/administration (20%)	Filtering options (20%)	Flexibility and ease of use (10%)	Performance (10%)	Installation (5%)	Documentation (5%)
<b>9.5 BorderManager</b>	10	9	10	9	10	8	8

Scores are based on a scale of 1-10. Percentages are the weight given each category in determining the overall score.



This comes in handy even when a distant Web server is unreachable because the cache server can generate the error locally without waiting for the client browser packets to return with an error message from the unresponsive server.

Tuning settings for the Proxy Cache Server include the amount of RAM and disk space allocated for cache purposes

and how to handle older information based on the time-to-live settings on some Web pages.

#### Installation and configuration

Installation relies on the tired C-Worthy interface familiar to users of Novell server software because security requires this product to be server-centric.

You can install BorderManager on an existing IntranetWare server or on any Intel Corp. system via the bundled run-time copy of IntranetWare. You must configure specific packet types and access levels set for each network interface on the host machine.

Some of the BorderManager configuration questions will catch NetWare specialists by surprise.

Packet- and circuit- level filtering for IP addresses is new to NetWare. If you are a NetWare-only manager, have your TCP/IP network administrator close at hand when you install BorderManager. Common questions include the name of your DNS server, backup DNS servers, gateways, subnet masks and default router addresses.

Those are the easy questions. Non-TCP/IP folks may faint when they see more than 60 different TCP protocol options with port numbers to control for the circuit-level part of the proxy — necessary, but new to NetWare people. The



Directed and presented by Ray Horak, Context Corp.

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default blocks all traffic in and out of the BorderManager server, which is safe but disconcerting if you aren't prepared.

Existing clients can download the upgraded client software from the NetWare server or use an included utility to upgrade the software automatically during a subsequent logon session, which works well for simple configurations. You also can upgrade client software directly from the distribution CD-ROM at each workstation. The full range of Intel clients is supported by the new Client32 software, from DOS to Windows NT and everything in between.

#### In summary

BorderManager controls every point of NetWare-to-TCP/IP network connection, giving Novell customers a way to connect to the world safely and quickly, while saving money on performance enhancements. Firewall functions are complete and solid, but not the highlight. Security, always a concern with Internet connections, is controlled for the entire network by NDS and NWAdmin in one comprehensive point of administration.

Web client acceleration, Web server acceleration and performance upgrades for entire networks are the biggest advantages most users will see.

If Novell moves to TCP/IP for client-to-server communications, the IPX/IP Gateway component of BorderManager will fade in importance. The Novell IP Gateway components, however, will become more critical to network control. In fact, all the controls within BorderManager for handling TCP/IP clients may be a trial run for next year's operating system.

Although there are more NetWare users today than Internet users, the first group is demanding to become part of the second. BorderManager is an excellent vehicle for taking them there.

Gaskin is a Dallas-area network consultant and author. His upcoming book, *IntranetWare BorderManager*, will be published by Sybex, Inc. in early October. He may be reached at [james@gaskin.com](mailto:james@gaskin.com).



# Management Strategies

## How to find trustworthy help

By Loretta Prencipe

**P**hil Munos, a systems engineer at First American Title Insurance Co., of Fairfax, Va., talked to everyone in his personal network when he was looking for a consultant. Forget the newspaper ads. "I needed someone to come in and get the job done. I didn't have time to waste," Munos says. He chose a consultant that his contacts recommended and trusted.

When it comes to hiring an IT consultant or vendor, or even renewing a contract, an important part of the decision is to choose a recommended company you can trust.



Phil Munos has worked as both a client and a contractor.

Lynda Goodman, an MIS manager for a law firm in northern Virginia and president of the Association of Legal Information Systems Managers, is still working with the network consultant she hired in 1991. The long-standing relationship is a result of trust. "Once technical skills, capabilities and references are equal, you need someone you feel good about and who can be a team player," she says.

Trust is defined as the "firm reliance on the integrity, ability or character of a person or thing." But how do you know when you can trust your contractor or vendor?

Ability is the most concrete factor to assess, but keep in mind that it is difficult to maintain. It's up

to the contractor to deliver and keep qualified experts that become part of the client's team.

Munos, who has worked as client and contractor, believes in the team approach. He uses prepared questions to ensure the consultant will fit in. The fit is essential, so Munos also lets his employees interview prospective contractors and gets their feedback.

Goodman chose her firm's consultant because he came across as a team player rather than a know-it-all. She specifically sought someone who was willing to answer questions, consider alternatives and explain why a particular system should be used.

Ann Coleman, manager of finance and administration for The American Short Line Railroad Association, of Washington, D.C., started with referrals and then chose a Windows NT vendor based on price, efficiency and support.

For her, the written agreement with the vendor goes a long way to establishing trust. "I wanted a contract that was easy to read and had everything spelled out," Coleman says. Support is critical, for example, so she closely examined the maximum turnaround time bidders offered.

Integrity and character are a bit more difficult to define. Munos advises managers to search for two key qualities in a contractor or systems integrator — professionalism and a realistic attitude.

When he was working as a contractor, he built up a good relationship with a particularly difficult government client where others had failed. But it

### WHAT TO LOOK FOR IN A CONTRACTOR

- ▶ **Ability:** You're paying good money, so you want a qualified expert.
- ▶ **Trust:** This is critical so get recommendations and find help you can always depend on.
- ▶ **Understanding:** You want someone who has a firm understanding of your needs. A contractor who oversells a project or commits to unrealistic deadlines isn't very effective.
- ▶ **Loyalty:** Someone who makes you feel like your company comes first.
- ▶ **Quality service:** Service above and beyond what you're billed for.
- ▶ **Respect:** Someone who respects your work culture, policies and procedures. If your office is full of white shirts and ties, your consultant should don the same apparel.

didn't happen overnight — it took months. Munos earned this trust in part by picturing himself in his client's shoes.

"I treated them how I would want to be treated," he says. He spoke to his client as one professional to another. He also set realistic schedules and kept to them. "I assured them that work would be done at a certain time. Follow-through was crucial. I met every deadline."

Goodman also emphasizes that your network consultant should be forthcoming even if the news is likely to disappoint or upset you.

Coleman recognized her contractors' appropriate attire as a sign of professionalism. "We are three blocks from the White House, and we have attorneys, lobbyists and senators walking in and out of here. It is important for our network people to be in a suit and tie," she says.

Above all, you should feel comfortable with your consultant's integrity and not get the feeling that you're hearing unrealistic promises or being oversold on a project.

Goodman gives her consultant the No.1 compliment. "He's ethical. [He] honestly believes in and chooses the system that is appropriate and not one that will earn him the best commission."

*Prencipe is an attorney in Springfield, Va., who prefers the gentler art of freelance writing on legal and employment topics. She can be reached at LWPrencipe@aol.com.*

### A consulting insider shares his advice

**P**eter Johnson, president of Virtuallogic, Inc., an IT consulting and integration firm in Bethesda, Md., shares tips for choosing a contractor you can trust.

- Don't be too persuaded by a snazzy sales presentation and what appears to be impressive technical knowledge. Before you sign the contract, make sure you take the time to check references. Shoot for someone that works at a similar-sized company using the same technology as you.

- Ask about the consulting or vendor firm's employee turnover rate — it should be no more than 25%. "Don't let the vendor say it's an industry problem," he says. "Heavy turnover in sales or technology indicates less than a quality environment."

- Choose a company with which you have good dialogue and rapport, one that makes you feel comfortable. Sometimes you also need someone who's willing to say no — it's better to have a consultant point out that your goals are unrealistic rather than make false promises and disappoint you down the road.



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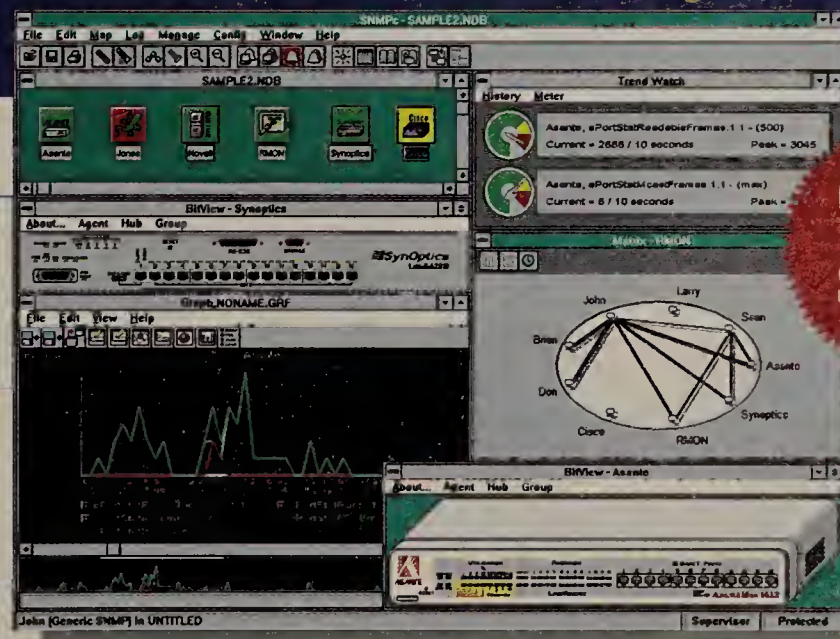
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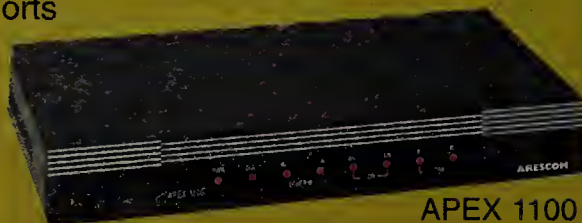


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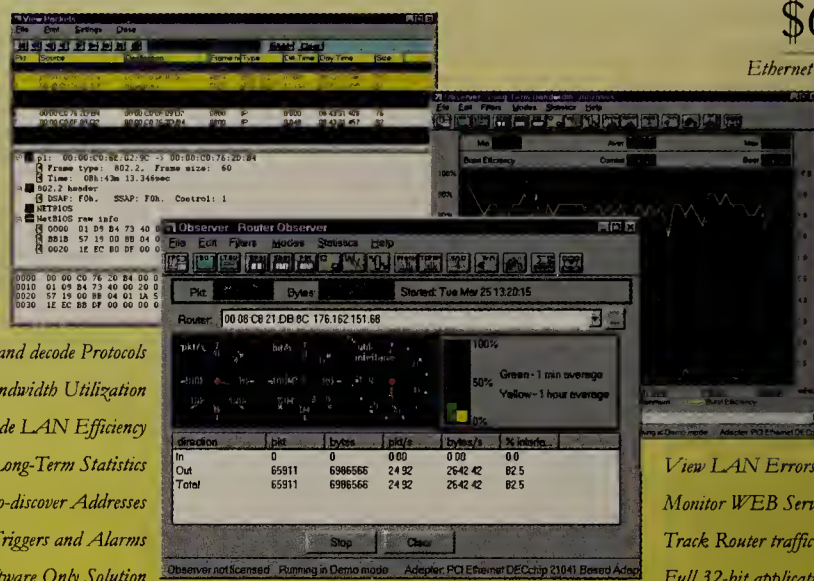
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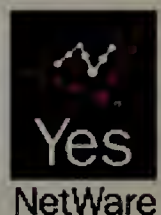
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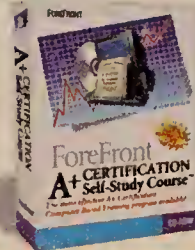
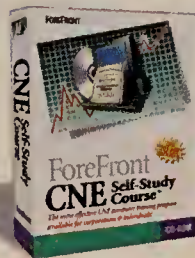
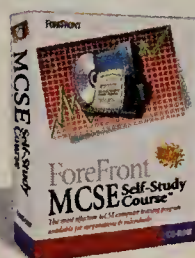


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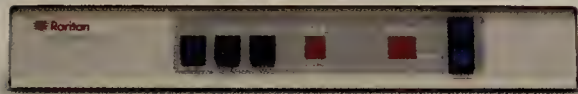
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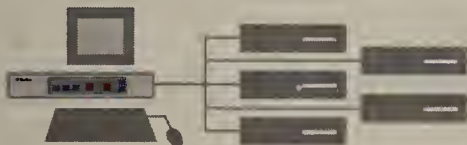
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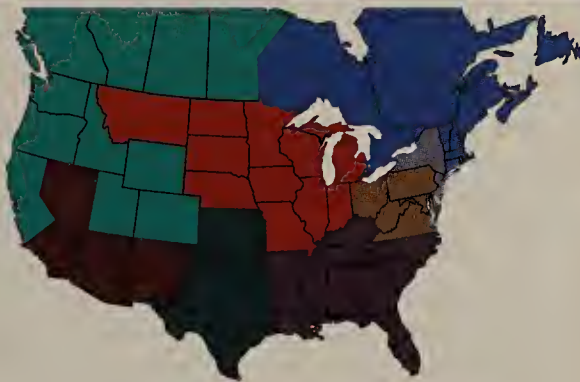
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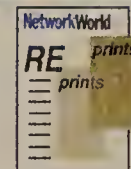
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## RSA

Continued from page 1

PGP. The company has promised it will put the specification in the public domain, giving authority over change to the IETF.

This throws e-mail security into disarray because the Secure Multi-purpose Mail Extension already has been or will be implemented in high-profile products such as Netscape Communications Corp.'s Communicator 4.0 groupware/messaging client and Microsoft Corp.'s Internet Explorer. It is expected to be included in other products such as Lotus Development Corp.'s Domino.

E-mail security technology has become a vital element for such products because custom-

ers increasingly are using e-mail to exchange important business information.

The setback stems from a recent IETF meeting in Munich. At the meeting, IETF Security Area Director Jeff Schiller, the referee on all security matters, essentially tossed S/MIME out of the game.

He said the fact that users have to pay licensing and royalty fees to RSA to develop an S/MIME product eliminated it from becoming an IETF-blessed standard.

"You shouldn't have to purchase technology from a proponent of a standard," said Schiller, who is manager of network services at the Massachusetts Institute of Technology.

A number of important items, such as an official charter for the planned Open PGP Working

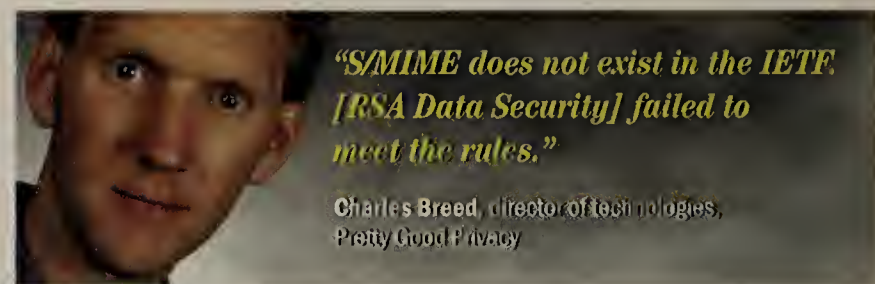
Group and possibly having PGP sign legal papers relinquishing change control on its technology, still need to be ironed out. But it appears likely that Open PGP is in and S/MIME is out at the IETF.

Charles Breed, PGP's director of technologies, said the Open PGP framework for public-key certificates, encrypted messages and digital signing will rely on the Diffie-Hellman key-management patents, which are held by Stanford University and managed by Cylink Corp.

Invented by crypto legends Whitfield Diffie and Martin Hellman at Stanford, the public-key technology will be available Sept. 6, which is when the 20-year patents expire.

In the midst of this setback for RSA, there is growing evidence that RSA's S/MIME interoperability tests for S/MIME products have been less than a success.

In the RSA-reviewed testing, vendors test their products against a single S/MIME reference implementation supplied by Worldtalk, Inc. But S/MIME



products are not being tested against each other directly.

Although Netscape's Communicator 4.0, now shipping, and Microsoft Corp.'s Internet Explorer 4.0, which is still in beta, both passed RSA's S/MIME interoperability tests, they do not work together. According to several sources, the two products can exchange encrypted mail, but they cannot check each other's digital signatures.

"There's been a misunderstanding," said Steve Dusse, RSA's chief technology officer. He said Microsoft and Netscape pulled a "bait and switch" in which the software each submitted that passed the tests was changed in the products that appeared on the market.

"By the time Microsoft released their S/MIME product, it had deficiencies," Dusse said. "The problem on the Netscape side was introduced between the beta and the final release."

RSA said it believes Microsoft and Netscape are fixing the problems so that the final Internet Explorer 4.0 and Version 4.02 of Communicator will be interoperable in S/MIME. RSA now wants to test final products, not beta code.

About a half-dozen S/MIME products are now on the market, including those from Frontier Technologies, Inc., ConnectSoft, Inc. and Worldtalk. ■

Get more information online at  
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## Delay

Continued from page 1

The standard was scheduled to be formalized — a step before finalization — at an International Telecommunication Union (ITU) meeting in September.

"This was a very aggressive schedule, and it now is in jeopardy," said Krechmer, technical editor of the "Communications Standards Review" newsletter.

"There's not a damn thing the technical committee can do about it. It's a lawyer problem."

It now could be 12 months before customers are able to buy interoperable, standards-based 56K bit/sec modems for Internet and LAN access.

"It doesn't make sense to roll out a service that's going to change in six months," said Dean Heltemes, remote access service manager for Cargill Corp. in Minneapolis, which is weighing deployment of 56K bit/sec modem support for telecommuters.

Currently, there are two incompatible 56K bit/sec modem technologies: one developed by U.S. Robotics and the

not be reached for this story, so far has not declared what he wants in return for letting others use his intellectual property.

A foreign patent search conducted by one of the modem vendors on the ITU committee turned up Townshend's claim — a broad patent filing on basic 56K bit/sec pulse code modulation modem technology.

Standards committee members contacted last week said they were not familiar with Townshend. But they said a committee member had contacted Townshend and he seemed willing to license his technology.

## Getting to know you

While Townshend could declare his intent to license fairly and reasonably in time for the next standards committee meeting, it may be too late. Whereas the major modem vendors have working relationships and a certain level of trust with one another, they do not know Townshend.

"A cautious company would not want to move ahead blindly," said Glen Griffith, director of standards development at Rockwell Semiconductor Systems. "They might want to wait for a patent to issue, see what it is, then design around it. Or they might want to start a dialogue with Mr. Townshend and make sure he can't hurt them."

other by Rockwell Semiconductor Systems and Lucent Technologies, Inc.

## Man in the middle

The man at the center of the modem controversy is Brent Townshend. Little is known about him other than he claims to own the basic intellectual property key to any 56K bit/sec modem. Townshend, who could

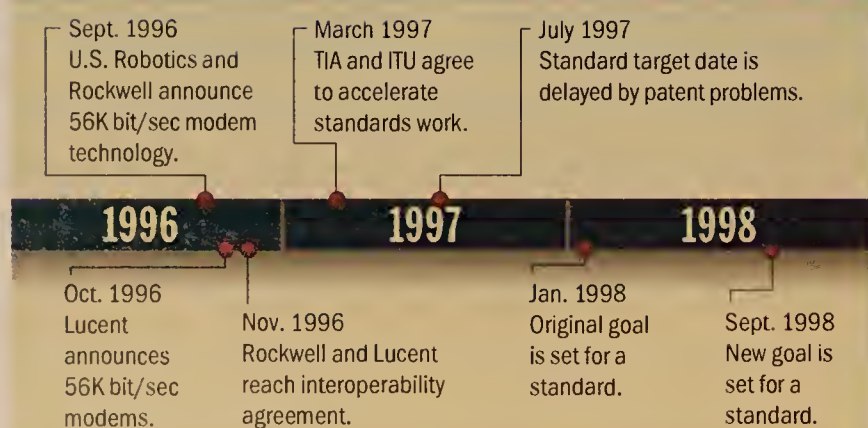
The ITU and Telecommunications Industry Association (TIA) have been cooperating to accelerate the standards process, but the intellectual property issue stands in the way. Major modem vendors are skittish about the huge financial impact that licensing fees could have on them.

"If you are talking \$1 per modem, then you're talking

\$100 million in royalties over two or three years, easily," Griffith said.

Les Brown, who is chairman of the TIA's 56K bit/sec modem committee and works for modem maker Motorola, Inc., said he still hopes an agreement can be reached next month. But if not, he said the standard likely will be delayed until September 1998. ■

## 56K modem standard: A moving target



## VocalTec speeds up 56K modem

There's more than one way to speed up a modem, and VocalTec Communications, Ltd. says it has a way to knock 15 to 30 seconds off every 56K bit/sec modem call to the Internet.

Rather than increasing the speed at which data is sent over the modem connection, VocalTec would shorten the time it takes to establish the connection in the first place.

Last week, the company sought support for its technology from Internet service providers at ISPCon '97 in San Francisco.

The company asked that ISPs push other vendors to make VocalTec technology part of the developing 56K bit/sec modem standard.

The VocalTec scheme would take certain steps involved in modem start-up procedures and run them simultaneously rather than one after another.

By doing so, the time it takes to establish a connection will be reduced. And that translates into cost savings to anyone paying for dial-up remote access where toll or 800-number fees are involved.

According to Ken Krechmer, a consultant at VocalTec, the new start-up procedure would not sap modem processing power.

He said the influence of ISPs was key to incorporating the procedure in modem standards because Internet access is driving 56K bit/sec modem sales.

— Tim Greene



## Switching

*Continued from page 1*

The switch label sprang up in the LAN industry as a way to differentiate hubs, which create shared-media LANs, from another kind of device — such as Kalpana, Inc.'s EtherSwitch — that connects traffic based on a static port-to-media access control (MAC) address association, Nolle said.

Since the introduction of the EtherSwitch in the late 1980s, the industry has understood it — and devices like it — to be LAN switches.

But building a network loaded with LAN switches can create broadcast storms, which must be controlled with routing. And so the Layer 3 switch — and all the confusion — emerged.

These new “switches,” like good ol’ LAN switches, can make forwarding decisions based on the packet’s destination address.

But they also have the

intelligence to make decisions based on Layer 3 information stored inside the packet. So these “Layer 3 switches” really are not switches at all, but routers with faster frame-forwarding capabilities.

“By definition, there can be no such thing as a Layer 3 switch,” said Kevin Tolly, president of The Tolly Group, a consulting and testing firm in Manasquan, N.J.

### You’re not alone

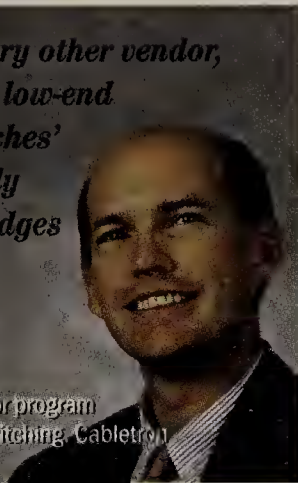
To further muddy the waters, LAN switches are different from circuit switches, which are found in telephone networks. Circuit switches send voice and data traffic across a dedicated communication path between the sender and receiver. They are more closely akin to ATM switches, which work in basically the same way.

Confused? You’re not alone. “We’re confusing the day-

lights out of everyone, and the poor users are left scratching their heads,” said Soni Jandani, director of marketing for LAN switching at Cisco Systems, Inc.

*“Just like every other vendor, we call some low-end devices ‘switches’ that are really multiport bridges because we need to stay competitive.”*

Frank Hayes, senior program manager of LAN switching, Cabletron



“There’s no doubt that ‘switch’ is the sexy term of the day, and so no matter what vendors build, they’ve got to call it a switch,” said Frank Hayes, senior program manager of LAN switching at Cabletron Systems, Inc.

### Which is a switch?

If some vendors are calling a multiport bridge a switch and others are calling a router a switch, who is right?

“It doesn’t make a difference what you call the product. All that matters is whether you are processing the packet at Layer 2 or Layer 3,” Tolly said. “If it’s at Layer 2, it’s a switch, and if it’s at Layer 3, it’s a router.”

Ah, but it does matter what the device is called from a marketing perspective.

“Layer 3 switching is really just a new buzzword for routing,” said Patrick Limpach, network services engineer at Case Western Reserve University in Cleveland. But he pointed out that vendors may sell more gear if they go with the switch nomenclature.

“If you call it a switch, people will buy it,” he said. But if you call it a router, people might worry because their CEO may have read a white paper that says routers are out and switches are in.”

While senior executives may get caught up in the marketing hype, Limpach said few engineers are fooled.

“I know what features I’m looking for, and I’m not just going to take any box with a swizzy-bang name and buy it because it sounds good or it is painted pretty colors,” he said.

### Melding monikers

But more and more, the most important feature customers are looking for in a LAN device is a

combination of switching and routing. And that helps explain the fuzzy definition associated with a switch.

“What we’re really seeing is the two types of products converging,” Tolly said. “The vendors who previously only sold switches — like Cabletron — are adding basic Layer 3 capability. And the folks that only sold routers before — like Cisco — are trying to make them as fast as switches.”

And in so doing, many vendors, such as Bay Networks, Inc., offer combination products that are being labeled as routing switches. For example, Bay’s Switch Node device sounds like a switch, but it is really a fast IP router.

“The fact is, people just don’t want to talk about pure routers anymore unless [they are] referring to the WAN,” Tolly said.

“When it comes to the campus LAN, switches, with a variety of different capabilities, will become the device name of choice,” he said.

In fact, the reason some vendors are latching onto the switch term is to detach themselves from the router’s negative connotation.

“The term router is getting the same type of negative association that [front-end processor] got near the end of its life,” Tolly said.

“In the beginning, the FEP was this great device because it saved you all kinds of money by off-loading work from your extremely expensive mainframe, just as the router was an expensive, powerful box that brought you all kinds of functionality. And now you can get as much functionality as you need from faster and much less expensive boxes, he said.”

This is not the first time the term “switch” has been confused in the industry. Remember the muddled meaning of switches vs. port switches? Vendors such as Bytex Corp. offered port switching hubs, which let customers group certain ports on the same LAN segment. Then when “real” LAN switches came on the scene from vendors such as Kalpana, customers were confused about getting dedicated bandwidth on every port, industry observers said.

And believe it or not, some of this confusion may be intentional. When there is confusion

in the industry, customers are often forced to cling to their incumbent vendor for product direction, analysts said.

The fact is, a true switch operates at — and only at — Layer 2. If the box offers Layer 3 capabilities, it just ain’t a switch — it’s a fast router. End of story. ■

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## Finding aliens with spare MIPS

*But perhaps you'd rather make a few bucks?*

The Search for Extraterrestrial Intelligence (SETI) wants your spare processing power.

SETI ([www.seti-inst.edu/](http://www.seti-inst.edu/)) is a blue sky project based on the assumption that, given the gazillions of stars in the sky, there is a high probability that life exists on a large number of planets orbiting some of them. If that is the case, then even if only a small percentage of those planets harbor "advanced"

civilizations that generate signals in the radio spectrum, we should be able to detect these signals.

Interestingly enough, there was an equation proposed to quantify this number. It is called The Drake Equation and you can find an explanation of it at [www.seti-inst.edu/drake-eq.html](http://www.seti-inst.edu/drake-eq.html). This is a nice piece of thinking, but unfortunately it leaves out aliens that are superintelligent shades of blue and communicate only by telepathy and the waving of luminous appendages. But I guess we've got to start somewhere.

SETI's strategy is to scan the sky with monster radio telescopes looking for signals that aren't natural. For example, maybe SETI will come across rhythmic signals carrying the alien equivalent of *The Price is Right*.

*There must be thousands of companies that would pay for using your spare computing power.*

Overall, this is a huge task. There's a lot of stars up there. The radio telescope in just one of SETI's initiatives, Project Phoenix, plans to examine 1,000 stars. As each star is monitored on about two billion, 1-hertz-wide channels, that's two trillion signal samples to examine.

From the beginning of 1995 to the middle of 1996, SETI managed to observe and analyze signals from about 300 of the target stars and, no, you didn't miss an announcement: The group hasn't found anything... yet.

Now given the incredible volume of data the group is generating, one of SETI's big problems is computer processing power. You don't look for telltale signals in two bil-

lion channels from 1,000 stars without some serious horsepower. Even with the super-computing resources SETI has access to, the group doesn't have nearly enough oomph to do the analysis as fast as it would like.

So to solve this shortfall, the SETI folks have cooked up SETI@Home. The idea is terrific. Knowing that there are lots of people who use screen savers, SETI figured why not use that spare computing power that's wasted when screen savers fire up?

The SETI screen saver will download a chunk of the signal data and, when it is active, display a graphic of processing progress or the overall project status. When the chunk has been analyzed, the screen saver will send the results back to SETI and start on another chunk.

You can sign up for the program or get more information on the project at [www.bigsience.com/setiathome.html](http://www.bigsience.com/setiathome.html). Imagine what an impact just 10% of corporate America's idle computing power could have on this research.

But wait, with all this computing power lying idle, why not sell it?

There must be thousands of companies that would pay for using your spare computing power.

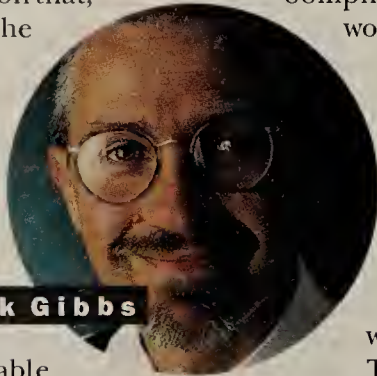
There's no end of rendering and modeling tasks that can be farmed out to multiple processors, so why not establish a MIPS Exchange?

If you wanted to sell your spare cycles, you would register with MIPEX, and potential consumers could bid for your spare cycles. Of course, we would need a system that allowed us to handle work from others so it couldn't hurt us. The system also would need to ensure that we couldn't see the purpose of the work or corrupt the results.

So what might our extra cycles be worth? A large corporation with, say, 2,000 166-MHz Pentium PCs being paid only \$0.0001 per 32-bit gigacycle with 16 hours idle per machine, per day could earn around \$696,000 per annum. Of course, there is a ton of details to be resolved, but nothing that should stretch us.

Until such a system comes along, I for one will be giving SETI my spare MIPS. I've got loads to spare here, and besides, I might be the first person to find the aliens.

*How many cycles do you have to spare? Send them my way at [nwcolumn@gibbs.com](mailto:nwcolumn@gibbs.com) or tell me your price by calling (800) 622-1108, Ext. 504.*



Mark Gibbs



## 'NET BUZZ

The latest on the Internet/intranet industry

By Chris Nerney

### THE NAKED TRUTH "The business of cyberspace is business."

That is what Calvin Coolidge would say were he alive today, if the results of a recent Dataquest report are any indication.

However, the conclusions of other researchers lead us to believe that Silent Cal's next comment would be, "So how can we access some of this Internet porn you speak of?"

The Dataquest report, issued last week by the San Jose, Calif.-based research firm, predicts that 82 million computers will be hooked up to the Internet by year-end — a 71% increase from 1996. And the driving force behind the trend,

Dataquest says, is increased use of the 'Net by the business sector.

By 2001, there will be 268 million computers with online connections, and most of them will be sitting on office desks, the report says.

Of course, the real question is what will desktop workers be doing with this new Internet access? According to two researchers who spoke last week at an American Psychological Association meeting in Chicago, it's entirely likely they'll be surfing for pornography.

Among other things, the researchers say their studies show that: Sex is the No. 1 search topic on the Internet; porn is the top moneymaker on the World Wide Web; and sex is the driving force behind Internet technological advancements.

All of which is good news for companies like ON Technology, of Cambridge, Mass., which sells software that allows companies to monitor workers' Web usage.

**COMPUTERS SELL, TOO** Maybe it's not as sexy as, well, sex, but a start-up that sells computer products through the Internet has just wrapped up a \$2.3 million venture capital deal.

Cyberian Outpost, Inc. of Kent, Conn., closed a first round of funding led by Connecticut Innovations, Inc.

Located online at [www.outpost.com](http://www.outpost.com), Cyberian sells PC and Mac computer parts.

**SEARCHING IN CYBERSPACE** Can't find those keys or wallet? Soon you may want to try looking in cyberspace.

A California man is launching an Internet-based nationwide "lost and found" service. Gordon French of Foster City, Calif., says he is building a nationwide database of lost items that can be accessed and searched for via the Internet.

Owners or finders of lost property can log on to French's Web site ([www.lost-found.org](http://www.lost-found.org)) to input the necessary information. French thinks the free service will appeal particularly to travelers, who often leave items behind.

**LEAVING WITH A SONG IN HIS HEART** Accel Partners research consultant Don Gooding will depart the San Francisco-based venture capital firm — and the venture capital world — before the end of this year to run his own a cappella music record company.

Gooding, himself a singer, says he began the company, **Primarily A Cappella**, in 1992 because he was having trouble finding a cappella recordings. The company has a Web site ([www.singers.com](http://www.singers.com)) that sells music from more than 100 a cappella groups, or, as Gooding calls them, vocal bands.

He's leaving a 15-year career as a market and technology analyst at Accel and, previously, **The Yankee Group**. Gooding's mission at Accel has been to scour the Northeast for investment opportunities in the Internet, telecommunications and network markets. Companies he helped hook up with Accel include **UUNET Technologies** and **PictureTel**.

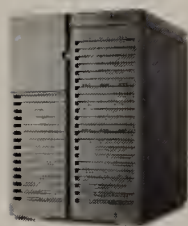
Gooding will be remembered by 'Net Buzz as a unique source. Rather than bombard us with baseless gossip, rumor and innuendo, he consistently supplied us with no-nonsense perspectives on industry events and trends. But we liked him anyway.

*The business of 'Net Buzz is providing you with the hottest Internet- and intranet-related news. But we need your help (cue background music). Contact Chris Nerney at (508) 820-7451 or [cnery@nw.com](mailto:cnery@nw.com).*



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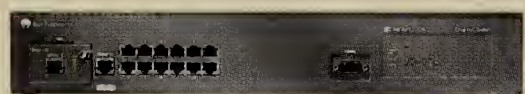
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